

AMERICAN VETERINARY REVIEW.

DECEMBER, 1914.

EDITORIAL.

EUROPEAN CHRONICLE.

BOIS JEROME, October 15, 1914.

DISEASE OF AUJESZKY.—“The name of Infectious Bulbar Paralysis proposed by Marek, and which has become classical since the publication of the treatise of *Special Pathology* of Hutyra and Marek, is not perfect. The physico-pathological study of the disease shows that the troubles do not proceed only from the bulbar paralysis; that name besides tends to confusion with true bulbar paralysis observed in animals, principally the horse. The expression of pseudo-rabies will not be perfect either, notwithstanding some common signs; there exist between rabies and the *Disease of Aujeszky* great differences, which scarcely justify the idea of close relationship. To describe the disease, under the name of *Disease of Aujeszky*, is besides paying a deserved honor to the one who made it known, and is the adoption of a more simple solution, common in medical literature, although it gives no indication as to the characters of the disease.”

Such is a footnote written by Professor L. Panisset in the excellent review he has written in the *Revue Generale* on infectious, *bulbar paralysis, pseudo-rabies, or disease of Aujeszky*, from which I make the following extract:

In 1902, Aujeszky, of Budapest, wrote on a new infectious disease of domestic animals, which is described as infectious bulbar paralysis, or pseudo-rabies.

It is an acute disease, generally fatal, whose agent is still unknown and which is characterized by nervous troubles of bulbar origin.

First mentioned and described in Hungaria by Aujeszky, who observed it in horses and in dogs, it was followed two years after by Kern in an outbreak of a disease, similar in its causes and manifestations (rapid evolution, local inflammation, general symptoms, particularly signs of irritation, ending generally in death and whose virus exists principally at the point of infection and in the central nervous system. Marek later mentioned the frequent appearance of the disease in dogs and in cats. It was observed in Hungaria and became the object of experimental studies at the veterinary schools of Hungaria and Germany.

Much data was obtained on the disease, the nature of the virus, its pathogenous action, but many points remain obscure yet.

As to the nature of the disease, up to the present time, the examination of preparations, colored or not, and the attempts with cultures of the products containing the virus, have always remained without results.

Until now the disease has been observed in bovines, cats, dogs, swine, wild boar, foxes and rats. According to St. v. Ratz, man is not entirely refractory to the disease.

Hungaria, Croatia, Russia and Bresil are the countries where the disease has been observed.

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The clinical study of three of our domestic animals is resumed as follows:

1. *Cattle.*—The disease is manifested by an irresistible itching manifested by constant rubbing of the nose, rarely of any other part of the body, and which results in the formation of hairless spots, bleeding, and surrounded with inflammatory, œdematosus infiltrations. The animal moans, strikes the ground convulsively with the hind legs. Attempts at examination give rise to increased agitation. There may be salivation with impos-

sible swallowing. The sight of people may promote, in some animals, fright, sweatings, grinding at the jaws. The appetite may last for a certain time, but soon the animal has tympanitis, and death occurs 24 or 36 hours after the apparition of the first symptoms.

2. *Dogs*.—At the onset the animal looks depressed, answers poorly and unwillingly to the master's call, he does not look at his food with avidity. He also often looks towards the region of the body where the virus has entered, repeatedly barking at the same time. If one knocks at the door of his kennel, he is frightened and jumps aside. The physiognomy has a fearful and painful expression. The exaggeration of the reflexes is accompanied with the sensitiveness and itching of the place of inoculation. Left at liberty, the dog is seen biting objects close by and trying to tear them. Yet he is never aggressive to man, although he bites his companions. He rolls himself in his kennel or on the ground, jumps at the wall, especially when he cannot reach the inoculated region. Abundant salivation is often observed, breathing is loud and difficult.

The temperature rarely goes above 39.5 degrees C.; towards the end of the disease it is most generally below normal. The appetite is diminished, thirst always very great, and even during the stage of agony the dog drinks with avidity.

The inoculated region is the seat of such itching that the animal scratches himself continuously until he reaches the superficial muscles which he then tears with his teeth. Towards the end of the disease, when exhaustion is complete, he still tries to reach and scratches the spot at the seat of the itching. Agony is rapid, but may also last several hours.

3. *Cats*.—The symptoms appear suddenly. In perfect health, the animal a few hours after, presents morbid, serious troubles.

He is quiet, lying crouched in a corner or now and then rises to look for a more quiet place. He moans and at times gives a plaintive cry. Saliva flows abundantly from his mouth. There is complete anorexia, soon accompanied with pharyngeal

paralysis. Swallowing is impossible. In about half of the cases there is a marked itching about the region of the head, ordinarily only on one side. Under this influence the animal scratches with his paws, rubs against surrounding objects, kicks at or bites the itching regions, which are soon hairless or raw. The pupils are of unequal size, and there is a diminution in the reflexes. There is generally hyperesthesia and a diminution of the tendinous and cutaneous reflexes. In many cases there are spasmodic contractions of the flexor muscles of the head and neck and of the depressors of the lower jaws. Respiration is labored. There is never any tendency to bite in animals infected naturally, but it may be observed in those subjects of experiments. A sick animal may bite its kennel's companions. Death occurs 24 to 36 hours after the first signs of the disease.

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The lesions are neither important nor characteristic. Congestion, hemorrhages, inflammation and often necrosis at the point of inoculation. There may be also congestion and small hemorrhage in viscera or the nervous centers. The diagnosis is easy when the typical disease can be followed from the beginning to the end. It is difficult when the symptoms are not well marked and if the itching is missing. Paralysis is specially accusative, but dogs are the animals where the symptoms are most marked. Death occurs often by apoplexy and the disease is then most difficult to be diagnosed.

Atypical forms may be confounded with rabies, especially when excitement is well marked.

In dogs the characteristic physiognomy of rabies is missing. He is aggressive only to dogs, never to man. The paralysis of the jaws of rabies is not present. Yet, towards the end of the disease, dogs will bite objects that are introduced in their mouth.

In cats the differential diagnosis between rabies and infectious bulbar paralysis is still easier. Rabid cats always are aggressive, except when they have paralytic rabies. Those that are

paralyzed with the disease of Aujeszky can be taken from their cage without any danger.

In horses the predominance of the signs of excitement renders the differential diagnosis with rabies more difficult. The apparition of the spasmodic contractions, the falling to the ground, the long duration of the disease suggest the paralysis.

The itching may occur in rabies. Inoculations will be necessary to insure the differentiation.

Condition of the urine and absence of irritability will define the nature of the paralysis of hemoglobinuria.

Progressive paralysis, some of which are described under the name of bulbar paralysis, affect only some nerves of the head, their duration varies and they terminate by recovery if no complication sets in.

The epizootic cerebro-spinal meningitis, by its peculiar symptoms, is well characterized.

The distinction with the acute diseases of the brain and its meninges or with the troubles due to parasites is insured by the absence of the itching.

Post mortem does not reveal the nature of the disease, nor to differentiate it from rabies, and often inoculations are to be made on rabbits, under the skin, in the eye, or in the brain, either with nervous substance or with blood.

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ETIOLOGY—EXPERIMENTAL STUDY.—The subcutaneous tissue of the place of entrance is especially virulent, then the blood, and after the central nervous system. The peripheric nerves contain no virus. Neither do the liver, kidneys, spleen, excreta. In some cases the urine has proved to be infected. Inoculations of bile, crystalline lens and saliva are without results. The virus passes in the foetus. The serum of the blood is virulent, but loses its properties when diluted over 1 per cent.

Receptivity.—Rabbits are easily infected. Guinea pigs also. Grey mice are more susceptible than white. Dogs and cats are among the domestic animals the most susceptible to it. Cattle and

sheep have the same condition of receptivity. Solipeds are more resisting, horses more so than donkeys. Pigs, pigeons and fowls are refractory. Goats can be infected. Sheep are sensitive to subcutaneous inoculation.

Contagion.—The disease is not transmissible by contact of sick with healthy animals. Infection of a solution of a continuity of the teguments has to take place. Experiments have failed to show that insects and especially fleas could carry the disease. Rats are probably the principal agents in bovines, as by their bites, when they are themselves diseased on their nose, they can inoculate it.

Mode of Entrance.—Providing there is a solution of continuity of the skin, subcutaneous inoculation is certain by the deposit of virus upon it. Introduced in the conjunctival cul-de-sac, in the nasal cavities and in the rectum, give no result. Food containing virulent products will transmit the disease. Subdural inoculation reproduces the disease with the shortest incubative period. Intraocular, peritoneal, muscular or venous inoculation is always successful.

Pathogeny.—Remains yet uncertain. For some the virus is transported by the lymphatics and again for others by the nerves. It does not appear to produce toxines.

Treatment.—All attempts have failed.

Immunity.—To this day all experiments made in that direction have been fruitless.

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BOVINE ANAPLASMOSIS.—Professor Lignieres, the learned director of the National Institute of Bacteriology at Buenos-Ayres, has published in the *Centralblatt fur Bacterio, Parasit, und Infektionske.* a long article whose extract I find in the *Presse Medicale*.

The work done by the author and its importance in showing that Tristeza of bovines in South America, being due to Protozoars the Piroplasmosis, is well known. The article which he presents now refers to another protozoar infection, the *Anaplasmosis*.

This affection exists in the Argentines, in an endemic form, in some regions of the north, where it can be introduced accidentally from other regions by infected bovines, true reservoirs of virus.

It is due to an hematozoar: *Anaplasma Argentinum*, of the same type as *Anaplasma marginalis* of Theiler, to which it cannot yet be identified.

In nature, anaplasmosis does not present itself in a pure state; it is associated with piroplasmosis by *P. Bigeminum* and *P. argentinum*. It seems that it is transmitted by the same tick: *Margaropus Microptus*. Contagion by Stomaxes does not occur.

To know well anaplasmosis, the parasite must be isolated, the disease be studied without any association and establish the differential characters between anaplasma and piroplasma. Then it is easier to understand the various modalities that anaplasmosis can assume when it is associated with piroplasmosis.

Inoculations of anaplasmosis to bovines is equally well made by subcutaneous, intravenous or intramuscular injections. The period of incubation is longer than for piroplasmosis and the march of the disease is also more regular.

Anaplasma will be readily found in the blood of the general circulation, especially during the final crisis, that is, when the symptoms of the disease and the hyperthermy are observed. The parasites colored very well and uniformly, as chromatine, by the Laveran or the Giemsa; they are quite perfectly round, homogenous, of various size and situated more on the periphery. One, two or three are found in the same corpuscles; some are free in the protoplasm. Parasited corpuscles which, at the beginning, are scarcely in the proportion of 1 per cent. may later reach to 30 per cent. and more of the total of the hematis. At the same time the alteration of the blood of acute anemia is observed.

Pure anaplasmosis is characterized by one or several irregular febrile crises, the most important one, that which decides the prospects of the sick animals, is accompanied with severe symptoms of acute anemia: loss of appetite, great weakness, rapid loss of flesh, pallor of the mucous membranes, acceleration of the

respiration and of the pulse, hard rusty feces. It is to be noted that notwithstanding the rapidity and importance of the degeneration of the corpuscles the urine never looks red in color. Jaundice is seldom observed.

Autopsy shows a blood extremely light in color, still coagulating; the tissues are pale, rarely yellowish. Muscles have kept their ordinary aspect, the spleen is twice or three times its normal size. Kidneys have their normal appearance, urine may contain albumine and no hemoglobin. Lymphatic glands, digestive canal lungs are not affected. Numerous petechias are frequently seen in the heart.

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Anaplasmosis is a specific disease, a morbid entity well marked and entirely distinct from piroplasmosis. But in the natural anaplasmosis, to the symptoms and lesions of the disease, there are added, in a more or less serious extent, and perhaps preceding them, the symptoms and lesions of piroplasmosis, principally hematoglobinuria and nervous spells.

In the regions where anaplasmosis is endemic, indigenous bovines suffer little from the disease, by opposition, imported stock die in enormous proportion. When they resist, convalescence is long and the disease takes a chronic form.

Anaplasmas can be kept for a very long time, more than a year. They are yet living and virulent in the blood of recovered animals. Immunity is gained after a first attack of anaplasmosis. Anaplasmas do not pass in the blood of the foetus.

Animals vaccinated against *P. bigeminum* and *P. argentinum* remain insusceptible to anaplasmas and *vice versa*. Immunized bovines against anaplasma remain sensitive to piroplasmas.

In blood rich with anaplasmas and cooled off to 20 C., the parasites remain some time living and virulent.

The diagnosis of anaplasmosis to be positive must be only after the study of the blood taken at the algide period of the disease.

The examination of the blood, after coloration to the Giemsa and methylene blue, is most useful. If there are *P. bigeminum*, the classical parasites will be easily detected. If it is *P. argentinum*, the hematozoars are very rare, small in form, rounded, coloring better with methylene blue, or again, in small bigeminated pear form slightly lanceolated.

The prognosis is always very serious. Large, fine adult animals are the most susceptible.

No specific is yet known against anaplasmosis. Tryplanblue is more injurious than beneficial.

As against piroplasmosis, police sanitary measures must be resorted to against anaplasmosis: destruction of the ticks, separation of infected from healthy regions. Immunization will be most beneficial against the disease.

Whatever may be the method of immunization resorted to in neither piroplasmosis as well as in anaplasmosis, it is not doubtful that the successive use of pure virus, advocated by Lignieres must be preferred to that of the blood, whose parasitic qualities are not exactly known.

The immunity conferred by the use of pure virus is very usefully reinforced by the injection of blood from animals from the tick regions spontaneously infected and containing parasites of the same type as those used for vaccination.

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WHAT WE THINK.—This is the heading of a leading article on *Veterinary Education* that has appeared some while ago in that go-ahead English professional paper, the *Veterinary News*.

At the beginning of the subject, the Editor writes, a sentence which is a most wise suggestion to some schools: "There is neither room nor use in a profession such as ours for pessimists, who perpetually argue that what was good enough for their fathers and grandfathers is good enough to-day, or that what meets the requirements of to-day will be equally satisfactory in meeting the exigencies of twenty years hence." But if such ex-

pressions find their application in a few instances, they certainly do not concern the schools of Great Britain.

Indeed, the issue of the *News* is a handsome announcement for British schools, London, Liverpool, Edinburg, Glasgow and the Royal Veterinary College of Ireland.

In the number referred to and for each school there are presented the requirements for matriculation, the length of the course, the division of the curriculum, etc., etc., concluding with the special courses, the post graduate for the Indian civil veterinary department, that for the army, where the officers of the veterinary department rank as Colonel, Lieutenant Colonel, Major, Captain and Lieutenant, as soon (I hope), the veterinarians of the American army will rank.

The various degrees that can be obtained from the British schools are quite numerous, that of B.V.Sc., M.V.Sc., D.V.H., D.V.Sc., M.R.C.V.S. This last, I believe, being the legal licence to practice Veterinary Medicine and Surgery.

The number of the *News* referred to is well illustrated by views of the various schools and also by likenesses of the Principal of each Institution. Veterinarians of America will be pleased to know the learned men, who lead and guide the profession in England.

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ADENO-CUTIREACTION TO TUBERCULINE.—At the *Society for Scientific Studies in Tuberculosis*, there has been presented a paper on the manifestations of the tuberculin reaction upon the lymphatic glands, which has a great importance, in the early diagnosis of tuberculosis, in the cases where cuti-reaction is powerless to discover it.

The author Doctor Germain Blechmann related that he had observed that the cutireaction obtained with brute tuberculin was frequently accompanied with a glandular swelling, more or less marked—of the lymphatic surface, where the scarifications had been made. And a curious fact that he had also observed was a similar glandular reaction in children who were to all ap-

pearance tuberculous and in which the cutireaction had been negative.

Continuing his observations, upon 271 children, out of 59 cases, 51 cutireactions were negative and had no swelling of the lymphatic glands. Of the 8 others which had a positive reaction, 2 presented the adeno-cutireaction.

In another observation, where 212 children were submitted to Von Picquet's reaction, out of 87 which were negative, 14 had a marked adeno-reaction, axillary or inguinal. In the others that were positive, 56 times out of a hundred, the adeno-cutireaction existed.

The specificity of the adeno-cutireaction has also been observed in an 8 months old child, who was treated for progressive broncho-pneumonia, in which the cuti-reaction had been negative in two occasions, although he had shown a marked glandular reaction. Tubercular bacilli were found in the pulmonary lesions.

"This glandular reaction seems," concludes the author, "a valuable help in the diagnosis of early tuberculosis."

A. L.

THE CHRISTMAS SPIRIT AND THE RESPONSE OF THE VETERINARIAN.

Christmas is not so much a day as a period of time, in English custom called Christmastide, when the Christmas spirit kindly leads all men to give tokens of goodwill and friendliness to their fellows. Never at any other time in the year, as in the month of December, is there quite that plenitude of benevolence and openhandedness which so beautifully reveals itself in the gift and in the giving. But the essential pleasures of this happy time come not so much from the gift as from the spirit in which it is given. The act is twice blessed—it blesses him that gives and him that receives. Christmas is the time when men's hearts are open and when they can be reckoned with to respond most readily to generous impulses and to an appeal for help where help is very much needed.

The editor of the REVIEW feels now, as he has always felt, that he can safely rely upon every loyal veterinarian to respond to a call for help given honestly, earnestly, and all the more needed in that the protracted delay in expected results has kept us all on edge. Help is needed for the last step in our work for the passage of the Army Veterinary Service Bill—the vote on it on the floor of the Senate. All the rest is over. There remains simply the vote on the Senate floor. The third and last session of the present 63rd Congress begins December 7 and ends March 4. We did not get the bill passed completely in the session just closed; but in the coming short session, just about to begin, our measure has the same place on the Senate calendar as before. If it is voted on favorably on the Senate floor between December and March it will become a law of the land.

Where is our Christmas spirit, our sense of aiding the needy, if we do not give help where it would be at once seasonable and most acceptable—in finishing this work, so nobly begun, so far continued and approaching an end. You can aid your fellow men in a large way, your profession in a larger way, by giving your hand to bring this work for the much-desired and much-needed reform in the Army Veterinary Service to a successful ending. Seventy-five out of the total of ninety-six United States Senators have informed their constituents in the several states that they are in favor of our measure. If the bill has not passed by Christmas Day, visit your Senator between Christmas and New Year's Day, and tell him how much needed the law is. That is practical helpfulness, and would be a most beautiful manifestation of the Christmas spirit.

A recent letter from Dr. W. Horace Hoskins brings the situation well before us:

DR. HOSKINS' LETTER.

November 6, 1914.

DEAR DOCTOR—This letter will bring to you the knowledge that our Army Veterinary Service bill has gone over until the December session of Congress.

The long period Congress was in session and the approaching elections resulted in an agreement not to take up the calendar, but pass only the appropriation bills and the war revenue measures and then adjourn.

Our bill does not lose its place on the calendar and every assurance has been given that it will pass in the third session of the 63d Congress.

More than seventy-five of the Senators have expressed themselves favorably to the members of the profession in the respective States.

I am writing you now because I want you to try and get in personal touch with your Senators while they sojourn at home during the next six weeks.

I am enclosing you one of our last appeals for service in this struggle for recognition that you may be better able to appeal to them in support of our bill.

Perhaps it might be well for the veterinarians of your district to select some one as a spokesman and lay upon him the task of taking up this matter in a personal way, for the home contact with your Senators is always more potent than through written appeals.

A quiet, patient effort for the next six weeks will insure our victory and remove this last place in our land where our profession has failed to gain just and proper recognition.

With every assurance of our final triumph, I am

Yours very truly,

W. HORACE HOSKINS,
Chairman.

G. S.

THE NEW ORLEANS MEETING.

Everyone in the profession and related to it, has been looking forward to the New Orleans meeting of the A. V. M. A. as something out of the common—so to speak—a meeting in a section of the country suggestive of a foreign land, in a city noted for its romantic picturesqueness, which the REVIEW has tried in its humble way to portray, fully realizing that we were not able to do it justice—it must be seen to be fully appreciated. And so, we have prepared for the trip. We have published in the following pages a picture of the Grunewald, Hotel Headquarters, the rates of which are \$1.00 and upwards for rooms without bath, and \$2.50 and upwards for rooms with bath, European plan, so that members might make their reservations in advance. We have followed this with the contributions to the programme and a schedule of rates over the official route from the east, together with the dates and hour of starting from different points.



THE GRUNEWALD—NEW ORLEANS, LA.

OUTLINE OF PROGRAMME OF A. V. M. A. MEETING AT NEW ORLEANS, DECEMBER 28 TO 31, 1914.

Section on Sanitary Science and Police. (1st Day.)

1. "The Diagnosis of Open Cases of Tuberculosis in Cattle," by D. H. Udall, Ithaca, N. Y.
2. "Studies on Bovine Infectious Abortion," by Ward Giltner and E. T. Hallman, East Lansing, Michigan.
3. "Observations on the Epidemiology of Contagious Abortion in Mares," by Frank W. Schofield, Provincial Health Laboratories, Toronto, Ontario.
4. "Cardiac Insufficiency at High Altitudes," by I. E. Newsom, Fort Collins, Colorado.

Section on Sanitary Science and Police. (2nd Day.)

1. "A National Institute of Comparative Medicine," by Fred J. Mayer, Opelousas, Louisiana.
2. "The Present Status of Immunization Against Anthrax," by A. Eichhorn, Bureau of Animal Industry, Washington, D. C.
3. "The Diagnosis of Rabies," by C. A. Zell, Abbott Research Laboratories, Chicago, Ill. Discussion by F. P. Machler, M.D., Supt. Iroquois Memorial Hospital.
4. "Hog Cholera Based on Serum Treatment," by George R. White, Nashville, Tenn.

Practice Section in Charge of Dr. L. A. Merillat, Chicago.

- "Osteoporosis," by C. A. Cary.
- "Laws Prohibiting Veterinarians from Dispensing," by H. Jensen.
- "Publicity in the Veterinary Profession," by F. F. Sheets.
- "Calculi of Bovines," by G. B. Jones.
- "Death in Animals Due to Electric Current," by J. F. Winchester.
- "Cottonseed Feeding in Swine," by G. A. Roberts.
- "The Actual Curative Value of Antitetanic Serum," by H. F. Palmer.

"Some Poultry Diseases of Interest to Veterinarians," by B. F. Kaupp.

Symposium on Shipping Fever.

1. "Shipping Fever of Horses," by J. R. Mohler.
2. "Shipping Fever in Kansas City," by A. Trickett.
3. "The Bacterial Findings in Shipping Fever," by A. T. Kinsley.
4. "Shipping Fever in the Southern States," by Peter F. Bahnsen.
5. "Shipping Fever on the Pacific Coast," by O. A. Longley.
6. "Control of Shipping Fever," by Walter L. Bell.
7. "Shipping Fever in Rural Districts," by J. D. Fair.
8. "Shipping Fever in Chicago," by G. B. McKillip.
9. "The Commercial Side of Shipping Fever," by A. N. Wentworth.

While the surgical subjects will be considered in connection with the excellent clinic that has been arranged for, the following subjects will be presented in a brief practical form at the regular sectional meeting:

- "Sutures, and Suture Materials," by L. V. Lacroix.
- "Haemostasia," by J. W. Adams.
- "Antiseptics," by L. A. Merillat.

ASSOCIATION OF VETERINARY FACULTIES AND STATE EXAMINING BOARDS OF NORTH AMERICA.

President, S. Stewart.

Secretary, Jacob Helmer.

Monday afternoon, December 28, 2 o'clock.

Call to order by President S. Stewart.

Reading of minutes of previous meeting.

Report of Secretary-Treasurer, Jacob Helmer, Scranton, Pa.

Address by the President, S. Stewart.

Discussion opened by W. Horace Hoskins, Philadelphia, Pa.—Langden Frothingham, Boston, Mass. J. L. Drexler, Thibodaux, La.

Report of Sub-Committee on collection of data leading to uniform Veterinary College instruction and State Board Examinations.—Thomas E. Maloney, Fall River, Mass. E. W. Babson, Gloucester, Mass.

Discussion general.

“The Value and Methods of Teaching the Fundamental Subjects in the Veterinary Curriculum,” by H. S. Murphey, Ames, Iowa.

Discussion opened by Jacob Helmer, Scranton, Pa.—Pierre A. Fish, New York State Veterinary College, Ithaca, N. Y.

OFFICIAL ROUTE FROM THE EAST.

SPECIAL TRAIN FROM NEW YORK TO NEW ORLEANS VIA CHATTANOOGA.

Dec. 26th—

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|---|-------------|
| Lv. New York, Pennsylvania Railroad..... | 10:08 A. M. |
| Lv. West Philadelphia, Pennsylvania Railroad..... | 12:15 noon. |
| Lv. Baltimore, Pennsylvania Railroad..... | 2:15 P. M. |
| Ar. Washington, Pennsylvania Railroad..... | 3:20 P. M. |
| Lv. Washington, Southern Ry..... | 4:00 P. M. |
| Ar. Lynchburg, Southern Ry..... | 9:25 P. M. |
| Lv. Lynchburg, Norfolk & Western Ry..... | 9:35 P. M. |
| Ar. Roanoke, Norfolk & Western Ry..... | 11:05 P. M. |
| Lv. Roanoke, Norfolk & Western Ry..... | 11:15 P. M. |

Dec. 27th—

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| Ar. Bristol, Norfolk & Western Ry..... | (Eastern Time) 3:45 A. M. |
| Lv. Bristol, Southern Railway..... | (Central Time) 2:55 A. M. |
| Ar. Chattanooga, Southern Railway, C. T..... | 10:20 A. M. |
| Six-hour layover to visit Lookout Mountain and battlefields. | |
| Lv. Chattanooga, Alabama Great Southern..... | 4:30 P. M. |
| Ar. Birmingham, Alabama Great Southern..... | 8:30 P. M. |

Dec. 28th—

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| Ar. Meridian, Alabama Great Southern:..... | 1:25 A. M. |
| Lv. Meridian, N. O. & N. E..... | 1:30 A. M. |
| Ar. New Orleans, N. O. & N. E..... | 7:00 A. M. |

REGULAR DAILY SCHEDULE WITH THROUGH PULLMAN, SLEEPING CARS AND A LA CARTE DINING CAR SERVICE.

Dec. 26th—

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|---|------------|
| Lv. New York, Pennsylvania Railroad..... | 3:34 P. M. |
| Lv. West Philadelphia, Pennsylvania Railroad..... | 5:42 P. M. |
| Lv. Washington, Southern Railway..... | 9:45 P. M. |

Dec. 27th—

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| Lv. Lynchburg, Norfolk & Western..... | 3:28 A. M. |
| Ar. Roanoke, Norfolk & Western..... | 5:15 A. M. |
| Lv. Bristol, Southern Railway..... | 9:15 A. M. |
| Lv. Chattanooga, Alabama Great Southern..... | 6:05 P. M. |
| Lv. Birmingham, Alabama Great Southern..... | 10:05 P. M. |

Dec. 28th—

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| Lv. Meridian, N. O. & N. E..... | 2:55 A. M. |
| Ar. New Orleans, N. O. & N. E..... | 9:10 A. M. |

RATES TO NEW ORLEANS.

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|---|---------|
| New York to New Orleans, Winter Excursion..... | \$56.30 |
| Philadelphia to New Orleans, Winter Excursion..... | 52.30 |
| Baltimore to New Orleans, Winter Excursion..... | 47.30 |
| Washington to New Orleans and return, Excursion..... | 45.00 |
| New York to New Orleans, one way..... | 33.15 |
| Philadelphia to New Orleans, one way..... | 30.90 |
| Baltimore to New Orleans, one way..... | 28.50 |
| Washington to New Orleans, one way..... | 27.20 |
| New York to New Orleans, party fare, one way..... | 27.20 |
| Philadelphia to New Orleans, party fare, one way..... | 25.40 |
| Baltimore to New Orleans, party fare, one way..... | 23.40 |
| Washington to New Orleans, party fare, one way..... | 22.68 |

PULLMAN SLEEPING CAR FARES.

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|--------------------|--------------------|--------------------|
| From New York..... | Lower berth \$8.00 | Upper berth \$6.40 |
| Philadelphia | Lower berth 7.50 | Upper berth 6.00 |
| Baltimore | Lower berth 6.50 | Upper berth 5.20 |
| Washington | Lower berth 6.50 | Upper berth 5.20 |

TRAINS FROM CANADA AND THE NORTH AND FROM NEW ENGLAND THAT WILL CONNECT WITH THE SPECIAL TRAIN FROM NEW YORK.

Dec. 25th—

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| Lv. Montreal, Grand Trunk Ry..... | 8:10 P. M. |
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Dec. 26th—

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| Ar. New York, New York Central..... | 7:26 A. M. |
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Dec. 25th—

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| Lv. Toronto, Toronto, Hamilton & Buffalo Ry..... | 5:20 P. M. |
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Dec. 26th—

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| Ar. New York, N. Y. C. & H. R. R..... | 7:50 A. M. |
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Good connection from New England points by all rail or sound steamer lines for special train or regular daily service.

ABOUT SECURING TRAIN ACCOMMODATIONS.

Everyone who has attended the A. V. M. A. and other large conventions knows the advantages of traveling on a special train with their own party. But in this instance, in addition to the superior service, privacy, etc., there is the difference of the beauty

of the trip and time of arrival. It will be noted that the *special train* will give you six hours in Chattanooga and get you in New Orleans at 7 a. m. on the day of the opening of the convention. Plenty of time to get settled in your hotel, washed up and break-fasted before going to the opening exercises. Whereas, the regular daily schedule train, does *not* give you the stopover in Chattanooga and does not get you into New Orleans until 9.10 a. m. Now while there is no question but what there will be 100 people going from Canada, the Middle Atlantic and New England States, Baltimore and Washington, the arrangements for special train service cannot be arranged for unless a hundred *signify their intention of going*. So in order to secure the advantages of this special train service, every person who hopes to participate in it should *write at once* to Mr. L. J. Ellis, Eastern Passenger Agent, Norfolk & Western Railway, 1245 Broadway, New York, requesting him to make reservations for them. If you neglect it now, you will regret it when it has become time to start and no arrangements have been made for your pleasure and comfort.

* * *

And when we have proceeded thus far, we are confronted with the realization that the veterinarians of sixteen states and those of the federal government are fighting a plague that threatens the live stock industry of our country; and while their desires are to attend the A. V. M. A. convention and visit romantic New Orleans, they are mindful of the fact that their first duty is the suppression and control of *Foot and Mouth Disease*, and they will uncomplainingly make the sacrifice and let their brothers in the non-infected states go on without them. But will they go? At first they expressed regret at the possibility of having to do so, and admiration at the uncomplaining sacrifices of those that were obliged to remain at home and fight this dreadful scourge. Then the thought of all the federal men and state veterinarians from sixteen states (many of them containing the heaviest veterinary population—one including the president and another the secretary of the association), having to be left behind, made the success of

the meeting a serious question, and a postponement until after the great feat of destroying the monster that threatens our live stock interests was suggested. The suggestion was acted upon by a poll of the executive committee by the secretary, resulting in a majority vote for postponement. A second poll of the executive committee was made by the chairman of that committee, again giving a majority for postponement. Expressions also came from Louisiana, fully appreciative of the possible effect that the existence of Foot and Mouth Disease in sixteen states, in the very heart of the membership, would have upon the meeting, and making it evident that a successful meeting at a propitious date would be much more satisfactory than a poorly attended meeting at the dates fixed; as the object of the meeting, there, as in other places, is to improve the conditions of the profession and impress the public with the importance of veterinary work. This applies even more forcefully to the meeting in Louisiana than it would in the northern or western states where it usually meets. It can do the profession a lot of good in the far south with a large impressive gathering, and as it is its first visit there, and not likely to return soon again, of course that is what it should be. But if held before the Foot and Mouth Disease is stamped out, the veterinarians' obligations to the live stock interests will make that impossible; and the chances of their work in that direction being completed before the dates set for the meeting (the last week in this month) are extremely doubtful. However, President Marshall, coming to the conclusion that neither he nor the executive committee have the power to postpone the meeting under the by-laws, has polled the membership, and the result of that poll will be found on page 366 of this issue. If the vote is *not* for postponement, get busy on your arrangements for transportation and hotel accommodation according to the foregoing information. If it is for postponement, the same information will apply later, when the new dates have been fixed.

(Continued on page 366.)

FOOT AND MOUTH DISEASE.

Despite the vigorous measures that were at once begun by State and Federal authorities to confine this present outbreak to the area where it first made its appearance—Southern Michigan—and stamp it out there, it spread rapidly, and very soon thirteen States had been quarantined: Massachusetts, New York, Pennsylvania, Indiana, Illinois, Michigan, Ohio, Wisconsin, Maryland, Iowa, Rhode Island, New Jersey and Delaware. In fact, it is more extensive than any of the five previous outbreaks that have occurred in the United States since 1870, and more States may be quarantined, not mentioned above, before this reaches REVIEW readers. We do not say this in a pessimistic frame of mind, as we have every confidence in the machinery of the State and Federal governments; but merely to account for any differences in the conditions that may be reported later that do not exist at this writing. From the office of the Bureau of Information of the United States Department of Agriculture the following paragraph gives the history of the present outbreak:

“ The present outbreak first appeared in Southern Michigan. How it was introduced there is not known. Shipments of diseased hogs from this place which passed to Chicago are believed to be responsible for the infection of the pens in the Union Stockyards. Once the yards became infected there was danger that every shipment of live stock through Chicago to other parts of the country might pick up the germs of the disease and spread the contagion. These shipments, composed largely of feeders and stockers, were sent to farms for fattening and did not remain in Chicago long enough for the disease to show itself in external symptoms. Some of the cattle, carrying the contagion, after shipment develop external lesions and this accounts for the outbreak of the disease in States as far apart as Iowa and Massachusetts. For this reason a large force of Federal inspectors is now running down every shipment and examining the animals or herds at their place of delivery.”

The first effort of the Department is to discover and segregate all animals sick with the disease or that have been exposed. To this end the Federal and State inspectors are now tracing up, through bills of lading and railroad records, all shipments of live cattle which have been made during the last sixty days out of any of the infected or suspected districts. The herds of animals so shipped are located and immediately examined by veterinarians. In this way the presence of foot-and-mouth disease has been discovered in various places in the present wide area now under Federal quarantine. Similarly, the numbers of all cars in which animals have been transported from these districts have been obtained, and these are being located and thoroughly cleaned and disinfected.

Following the imposition of a general Federal quarantine, and the killing of actually infected herds, comes a farm-to-farm inspection of the entire quarantined area. Later, when it becomes clear that the disease has been localized, it will be possible for the Federal and State authorities to free from quarantine all but the actually infected counties or districts and allow the uninfected territories to resume interstate shipments of stock.

That sort of thing takes time and requires zeal on the part of those engaged in the work. It is reassuring, however, to know that we have such well-equipped State and Federal organizations, to systematically handle this immense country-wide proposition. Wherever it appears in a State, a quarantine is immediately thrown around that State, and then the interior investigation pursued and the extent of the infection within its borders determined. The State authorities dealing in a like manner with the farms, and destroying all animals in a herd, even if but one case is found, slashing the hides of the animals to render them valueless and insure against exhumation of the carcasses for the skins, and burying deep, covered with lime. Thus the infection is removed at one stroke from that herd—the herd is no more. It seems like drastic measures on first thought, but when the terribly infectious nature of the malady is considered, and the worthlessness of recovered cases, and the fact that the

disease recurs in animals apparently cured, and that these recovered animals may be infection carriers for a year, even when they show no signs of the disease themselves, it is apparent that the course adopted by the Federal government is none too drastic, and is in fact the only measure that will prove effective. It is an expensive disease in countries where it has gained a real grip as the following figures from the U. S. Department of Agriculture will show. In the last serious outbreak in Germany, the German government spent \$2,000,000 in fighting it. In 1890, official statistics showed that in the German Empire 431,235 cattle; 230,868 sheep and goats; and 153,808 swine were affected with the disease. During the same year the pestilence ravaged live stock in France, Italy, Belgium, Austria-Hungary, Switzerland, Roumania and Bulgaria. In 1883 it was estimated that the disease cost England \$5,000,000. On the occasion of the last outbreak in the United States in 1908, \$300,000 was appropriated by Congress, and was spent in stamping out the disease. It is a much bigger job this time, and will require more time and more money to accomplish, but there will be no let up until it is completely eradicated.

In as much as that we have been questioned by medical men and laymen as to the danger of this disease being communicated to human beings, and have learned that veterinarians are constantly being asked the same question, we are reproducing here a statement on that very phase of the subject from the U. S. Department of Agriculture. For while veterinarians are entirely familiar with the nature of this disease, we know that they will be glad to rest the responsibility of the human end of it upon so great an authority as the U. S. Department of Agriculture.

"HUMAN HEALTH AND THE FOOT-AND-MOUTH DISEASE."—The anxiety that has been expressed in several quarters in regard to the effect upon human health of the present outbreak of the foot-and-mouth disease is regarded by Government authorities as somewhat exaggerated. The most common fear is that the milk supply might become contaminated, but in view of the

precautions that the local authorities in the infected areas are very generally taking, there is comparatively little danger of this. Milk from infected farms is not permitted to be shipped at all. The only danger is, therefore, that before the disease has manifested itself some infected milk might reach the market. For this reason experts in the department recommend pasteurization. As a matter of fact, however, pasteurization is recommended by the department any way for all milk that is not very high grade and from tuberculin-tested cows.

"It has been demonstrated by experiments which have been made in Denmark and Germany that pasteurization will serve as a safeguard against contagion from the foot-and-mouth disease just as readily as it does against typhoid fever, but in any event it must be thoroughly done—the milk must be heated to 145 degrees F. and held at this temperature for 30 minutes.

"In this country the foot-and-mouth disease has been so rare that there are few recorded cases of its transmission to human beings. In 1902 a few cases were reported in New England and in 1908 in a few instances eruptions were found in the mouths of children, which were believed to have been caused by contaminated milk. In both of these outbreaks the sale of milk was stopped as soon as the disease was found among the cattle. As long therefore as the disease can be confined by rigid quarantine to certain specified areas the danger from this source is very small. Should the pestilence spread all over this country and become as general as it has been at various times in large areas in Europe, the problem would become more serious. Under any circumstances, however, pasteurization would be an efficient remedy. Where pasteurization is not possible and where there is any reason to suspect that the disease may exist the precaution of boiling milk might be advisable.

"Cows affected with the malignant form of the disease lose practically all of their milk. In mild cases, however, the decrease may be from one-third to one-half of the usual yield. The appearance of the milk also changes. It becomes thinner, bluish,

and poor in fat. When the udder is affected, the milk frequently contains coagulated fibrin and blood, so that a considerable sediment forms, while the cream is thin and of a dirty color. These changes, however, occur only when the disease is in an advanced stage, and, as a matter of fact, the disease is not permitted to pass into an advanced stage, as any stricken animal is at once slaughtered.

"Men who come in contact with diseased animals may also become infected. In adult human beings the contagion causes such symptoms as sore mouths, painful swallowing, fever, and occasional eruptions on the hands, finger tips, etc. While causing considerable discomfort, however, the disease is rarely serious. Where it is very prevalent among animals, some authorities believe that it is fairly general among human beings, but that the disturbances it causes are usually so slight that they are not brought to the attention of the family physician. There is, however, a very good reason for everyone giving the diseased animals as wide a berth as possible, namely, that otherwise they may easily carry the disease to perfectly healthy herds. Federal inspectors engaged in the work of eradicating the pestilence are thoroughly equipped with rubber coats, hats, boots and gloves, which may be completely disinfected; and others who lack this equipment are strongly urged not to allow their curiosity to induce them to become a menace to their own and their neighbors' property.

"The disease, in short, is dangerous because of the loss that it occasions to property, and not because of its effects upon the health of mankind. At present all infected herds are being slaughtered as soon as they are discovered, the carcasses buried, and the premises thoroughly disinfected. Until all danger of infection has been removed in this way the local authorities quarantine the milk.

"Those who wish additional precautions are recommended to use pasteurized milk, but as has already been said, this recommendation holds true whether or not there is any fear of the foot-and-mouth disease."

SECRETARY WALKLEY AND THE LOBECK-LEWIS BILL.

Feeling that veterinarians both in and out of the B. A. I. service throughout the country, whose pleasure it has *not* been to meet Secretary Walkley of the National Association of Bureau of Animal Industry Employees, would like to look upon the genial but earnest countenance of the man who spent four months in Washington during the last legislative session in the interest of the Lobeck-Lewis Bill, was re-elected secretary of the above-named association at Denver in August after his return from the national capital, and will probably be asked by the national B. A. I. association to go back as their representative during the next session of Congress, we are publishing his picture here. There is no question but what Dr. Walkley is keenly interested. Besides, he has acquired a knowledge of the ways of the legislators and will lose no time "learning the ropes" when he goes down this time. And last but by no means least, he has a personality that wins; and we sincerely hope that for the sake of the cause, he will see his way clear to again accept this important mission, should his brothers in the national body request it, even though he will be obliged to make some personal sacrifices to do so. In the meantime the association is not idle; it is making every legitimate effort to bring its cause before the legislative body. The following is one of *many* suggestions of means of educating Congressmen and Senators on points relative to the B. A. I. men's work and their needs.

"All Branches are requested to appoint a Legislative Committee of three or five members whose duties it should be to interview all Representatives and Senators in their respective districts and use every possible effort to induce them to visit packing houses and stock yards and observe Bureau Employees while engaged in the performance of their official duties. Employees in field work are also urged to induce Congressmen and Senators to visit dipping vats and become familiar with the Bureau work in connection with tick and scabies eradication. As

members of the House and Senate Committees on Agriculture are keenly interested in the eradication of hog cholera it is very important that all members of Congress be made acquainted with



DR. S. J. WALKLEY.

the magnitude and the unpleasant nature of the work and its economic value in conserving the swine industry of the Nation. Whenever it is found practicable, members of Congress should be urged to witness the hog cholera serum demonstration by Bureau employees. The Legislative Committees of the various

Branches are urged to make careful check of the Congressmen and Senators in their respective states to see that none are overlooked. If there should be any question as to which Branch should interview any member of Congress, local Secretaries should correspond with each other in order to reach a definite understanding. If, for any reason, the Branches cannot prevail upon any particular member of Congress to make a personal observation of Bureau Work, this fact should be reported to the National Secretary, giving the name and address of the member of Congress, result of correspondence or interviews, and other particulars."

It is also quite probable that the National Association of B. A. I. Employees will send a representative to the A. V. M. A. convention at New Orleans. Indeed such a movement has already been instituted. Dr. J. E. Gibson the president of the N. A. B. of A. I. E. is looked upon by the executive committee as the logical man to fulfill that mission, and will probably be prevailed upon to do so. Nearly every state and local association throughout the country have indorsed the Lobeck-Lewis Bill, and it only remains for President Gibson to get the indorsement of the A. V. M. A.

All B. A. I. men probably already know of the movement that has been started to create a fund, to be known as The Salmon Memorial Fund, with which to erect a monument to the memory of the great man that laid the foundation of the United States Bureau of Animal Industry and acted in the capacity of chief of that bureau during the first quarter of a century of its existence, and are all extremely interested in the project. To them we will say that Dr. S. J. Walkley, 185 Northwestern avenue, Milwaukee, Wis., will receive all contributions to that fund, coming from Bureau Veterinarians, and will transmit same to whoever is to receive the general funds.

Dr. J. F. De Vine filled a contract with the French government, the last week in November, for 500 horses for military purposes; which the doctor states was a paying enterprise.

ORIGINAL ARTICLES.

FILTERABLE VIRUSES.*

BY PROF. K. F. MEYER, BERKELEY, CAL., DEPARTMENT OF PATHOLOGY AND
BACTERIOLOGY, UNIVERSITY OF CALIFORNIA.

(Continued from Last Issue.)

The observations of Bordet on pigeon diphtheria and of Bordet and Fally on fowl diphtheria, particularly the successful cultivation of a specific micro-organism, by which the investigators were capable of reproducing the clinical symptoms of the disease, again opens the question of the identity of fowl diphtheria and epithelioma contagiosum of chickens. Carnwath, Uhlenhuth and Manteuffel, Ratz, v. Betegh and others consider these diseases to be identical; the careful experiments of Bordet and the observations of Haring, Sweet and others, on the other hand, do not support this view.

Haring, particularly, has shown that the immunity conferred by an inoculation with the virus of epithelioma contagiosum does not prevent development of clinical roup. In a few experiments carried out with epithelioma virus from Pennsylvania, I was unable to produce diphtheria; still, there are possibilities that the amount of virus introduced was not sufficient and, furthermore, that the diseases in America have no relationship to each other. Some experiments of Ward show very clearly that epithelioma contagiosum is constantly and readily transmitted by inoculation, whereas roup is not (in 5.8 per cent. only). Some of his experiments permit the conclusion that the virus of epithelioma contagiosum is occasionally mixed with the virus of fowl diphtheria or roup. In considering these results it is absolutely essential that further experiments be undertaken on quite similar lines and from the above-mentioned viewpoint.

* According to a report for the Tenth International Veterinary Congress, 1914, in London.

A large number of filterable viruses remain active for a long period when kept outside the body, when protected from light and changes of temperature. Nocard found the virus of African horse sickness virulent after two years and four months, when hermetically sealed in glass tubes. Haring had some virus of epithelioma contagiosum in a test tube at ordinary laboratory conditions and found it of marked virulence after an elapse of four years. Similar observations on other viruses suggested to v. Prowazek that some microscopically visible forms of the vaccinia virus are very resistant. Many viruses, like those of vaccinia, fowl pest, pernicious anemia, even hog cholera, are resistant against desiccation, whereas, on the other hand, the causative agents in cattle plague, foot and mouth disease, etc., are destroyed in a very short time.

Similar differences are noted in the thermo-resistance of the various viruses. Temperatures above 60 degrees are fatal for most of the filterable viruses; temperatures below 50 to 60 degrees C. attenuate certain viruses. Higher temperatures are more effective when the virus is tested in a medium free from all albuminous substances.

Kuhn found that the pleural exudate, containing the virus of African horse sickness, when heated to 60 degrees C., will become attenuated in degrees which depend on the length of exposure. The attenuation is indicated by a prolonged period of incubation.

Peter attenuated the virus of hog cholera by heat and recommended such a virus for vaccination, but the experiments of Dorset and Uhlenhuth and his collaborators could not, on account of inconstant results, confirm his observations. Lower temperatures act generally as a preservative on filterable viruses. With the exception of the virus of sheep-pox and hog cholera, all filterable viruses are resistant, in varying degrees, to putrefaction.

The behavior of filterable viruses towards chemicals has only revealed the fact that remarkable differences exist. However, no systematic study has been undertaken to demonstrate these

differences, with the exception of glycerin and antiformin. All filter passers, as far as data are available, with the exception of the virus of sheep-pox and rinderpest, are uninjured by the action of glycerin. Uhlenhuth has demonstrated that antiformin does not affect the virus of hog cholera; his experiments were of great importance in eliminating, in a simple manner, the secondary invaders. Friedberger and Yamamoto found the vaccinia virus inactive when treated with a 1 per cent. solution of antiformin. These few experiments do not permit of any conclusion. It is very important to have further and more systematic tests, with chemicals, carried out on various viruses.

Since v. Prowazek and Halberstadter have shown that protozoa are more easily destroyed by such cytolytic substances (5 per cent. solutions in one hour), as bile, bile salts and saponin, than bacteria (except the pneumococcus), experiments have been carried out on a fairly large number of filterable viruses with the aim of throwing some light on their probable nature, whether bacterial or protozoon.

The reaction on protozoa by these cytolytic substances is a process of saponification of the lipoids of the periblast.

The experiments so far reported have not been conducted with sufficient uniformity to permit far-reaching conclusions for a classification of the viruses.

Vaccinia is only destroyed by rabbits' bile, a 5 per cent. dilution of sodium taurocholate does not affect the virus. Landsteiner and Russ found the virus of fowl pest inactive after treatment with a 0.5 per cent. solution of saponin. According to Rogers, the fowl plague, to Lingard the rinderpest, and to Kraus the rabies virus are destroyed by bile. On the other hand, Landsteiner and Russ found the bile inactive on the fowl plague virus. The virus of epithelioma contagiosum of pigeons was not changed by a 1 per cent. solution of saponin and a 10 per cent. solution of sodium taurocholate in the experiments of v. Prowazek and de Beaurepaire Aragao. Fukuhara found the rabies virus inactive after treatment with lecithin. Sieber demonstrated the great resistance of the virus of African horse sick-

ness against 5 and 10 per cent. solutions of saponin, sodium taurocholate and bile. Rous and Murphy mention the fact that the chicken sarcoma virus does not resist treatment with saponin or bile. Inasmuch as Uhlenhuth and his collaborators have tested, in one experiment only, the effect of a 10 per cent. solution of sodium taurocholate on the hog cholera virus and found it to be inactive, I have undertaken a large series of experiments on which I reported in 1912. These experiments demonstrated the fact that a 10 per cent. solution of sodium taurocholate did not destroy the hog cholera virus when it was exposed to the chemical for 24 hours, at 37 degrees C., in two experiments. In two other tests even a 5 per cent. solution was destructive, and rabbit bile attenuated the virus, although it still immunized. Saponin in 10 per cent. and 5 per cent. solutions was uniformly detrimental to the virus, a 1 per cent. solution attenuated the virus in a similar manner as above mentioned for the rabbit bile. Lecithin in a 20 per cent. solution did not kill the hog cholera virus.

From the experiments it is apparent that the hog cholera virus does not belong in the group of protozoa, and the findings of spirochaetes by King, Baeslock and Hoffmann, which they associate with hog cholera and even consider to be their causative agents, are not well supported by the results with these cytolytic substances.

The extreme minuteness of the viruses accounts, perhaps, for their contagious nature and virulence. It explains also why most of the viruses are active in extremely high dilutions. Yet these facts are not absolutely constant, and we find differences even when the best possible position and the natural portals of entry are selected. The observations of Theiler during his studies on the immunity of African horse sickness, that the virulence of a virus is quite different when it is obtained from various localities, we have also found in connection with some work on hog cholera. The hog cholera virus in the eastern states of America frequently produces in highly susceptible pigs only a mild and chronic form of cholera as compared with the viruses

from Iowa or North Dakota, which invariably causes the acute septicemic form of the disease. An immunity produced with an eastern strain will not protect against a western strain, but the reverse is easily achieved. Such experiments are very difficult to carry out, as the individual disposition is extremely variable even when age and species of the animal are kept as constant as possible. Considering, at the same time, the remarkable fact that most of the filterable viruses are only transmissible to animals of the same species, the exceptions being rabies and vaccinia, it is not surprising that the causes of these conditions have not been studied in detail. Another obstacle, which is found in these studies, is the observation that many filterable viruses are changed by mutation to such an extent that they show entirely different biological properties. The virus of foot and mouth disease loses its pathogenic effect for bovines when passed through little pigs of a special race (Loeffler); the fowl pest virus loses its virulence when transmitted to pigeons. These few facts should be carefully considered when working with filterable viruses and proper statements as to the origin of the virus should be made; the experiments being carried out only with a constant and unmutated virus.

Inasmuch as most filterable viruses on account of their minuteness obey the physico-chemical laws which govern the diffusion of gases and of substances in solution in liquids, they are extremely contagious or possibly "air-born." The contagiousness depends, however, largely on two conditions: the source and the portal entry of the infection.

When a virus is eliminated by the excretions, the respiratory air, the skin, etc., and can exist outside of the host under favorable conditions and can enter into the body through the injured skin and mucous membrane of the intestinal or respiratory tract, it is (by experience) extremely contagious. For some viruses an inoculation into the skin by bites of an infected animal or by intermediate insect carriers are absolutely necessary; under these conditions the direct contagiousness has not been observed. The transmission of filterable viruses of animals by insects has been

conclusively proven only for the heart-water diseases of sheep in South Africa, epithelioma contagiosum of chickens and horse-sickness virus by stomoxys in the experiments of Schuberg and Kuhn.

Bacteria play a very important secondary part in many diseases caused by filterable viruses; in some diseases, indeed, the investigations thus far carried out do not permit a final conclusion as to the actual importance of these invaders. Quite recently two different kinds of bacteria have been isolated in distemper of dogs and the accepted conclusions, based on the findings of Carre, that this disease of dogs is caused by filterable viruses, has been severely shaken. Galli-Valerio and Kregenow have already reported that the filtrates of the secretions in distemper are not infectious, and the results of Ferry, Torrey and others are, therefore, not surprising. Whether the real distemper of dogs is actually caused by a *B. paratyphosus B.*, as v. Wunschheim claims, has still to be proven. In a recent publication Th. Smith calls attention to the frequent occurrence of a bacillus identical with that isolated by Torrey in pneumonia of guinea pigs, and it is apparent that a possible relationship between the two organisms exists.

The question of the importance of the bacillus of fowl diphtheria has already been mentioned above, and it is only another instance where further careful experimental work is badly needed. At the present stage of knowledge, one is not justified in condemning the findings of Loeffler, Muller, Hauser and others in connection with this disease. The work of Pfeiler and Kohlstook has shown how important a hog cholera-like organism can be in connection with diseases in pigs. The very careful experiments of these investigators have clearly proven that actually two forms of hog cholera exist in Germany and Hungary, one being caused by the known filterable viruses, the other due to a bacillus related to the hog cholera group, the bacillus of Voldagsen. As the disease in young pigs has great similarity with the one caused by the filterable viruses, it was not properly recognized by many investigators and was classed, without fur-

ther investigations, with hog cholera. Even if the association of the *B. suis* with the disease is very close, the interpretation of its importance by Uhlenhuth and his associates, following the findings of Dorset and McBryde, De Schweinitz, Theiler, Hottinger, Smith and others is too erratic, and it is surprising that similar mistakes are not more often made. In my opinion the secondary invaders, in many diseases due to filterable viruses, are as important as the virus itself, particularly in hog cholera. No careful pathologic-anatomical studies are available in which the statement is actually proven that the secondary invaders are primarily responsible for the post-mortem lesions. If we conclude by analogy, comparing African horse-sickness and rinderpest with hog cholera, the secondary invaders at least cause all the changes which are not purely confined to the capillary system. In the septicemic form of hog cholera the general petechiation alone indicates the effect of the filterable virus.

In practically all filterable viruses, secondary invaders are common. In African horse-sickness, Theiler and the author frequently found a colon bacillus in the spleen. In cattle succumbed to pleuropneumonia, various types of cocci have been isolated from the heart blood.

The streptococci and the staphylococci found in the contents of the blebs in foot and mouth disease also belong to the same group, and explain the findings of Niesser and others. Although Poels, Basset, Gaffky and Bemelmans have proven the filterable nature of the virus of equine distemper, and Gaffky and Luhrs have demonstrated by transmission experiments the probable protozoan character of contagious pleuropneumonia of horses, the *B. bipolaris* and the *streptococcus pyogenes equi* have secondary importance.

In many diseases the secondary invaders are so constant that they can be isolated in pure culture and the recovered animals remain carriers for a long time, as has been shown by Petrie and O'Brien in connection with a guinea-pig septicemia.

The importance of spirochaetes in hog cholera, to which King and his associates have devoted several publications, has already been discussed.

Arnheim considers the spirochaetes found in hogs to be saprophytes of the intestinal tract. I cannot entirely support his views, inasmuch as I have seen these protozoa also acting as true tissue parasites in a submaxillary lymph-node following a severe croupous conjunctivitis with tremendous quantities of spirochaetes. Even without hog cholera such spirochaete infections of the ectoderm have been seen.

In some instances the filterable viruses even cause the reappearance of latent protozoa (*pirosoma bigeminum* and *mutans*) in rinderpest or in heart water.

The possible symbiotic relationship of the virus to pathogenic bacteria has not been studied in many animal diseases. V. Prowazek has shown that the "energetic symbiotic" condition not only increases the virulence of the organism but also the effect on the host. The study of this relationship is of considerable practical importance in the attempts to control one or more agents of the disease by immunization.

The study of the anatomical changes caused by filterable viruses has not been appreciated sufficiently. The interest being more concentrated on the attempts to find the causative agent naturally led only to the search for cell inclusions and chlamydozoa. On account of the remarkable biological differences of the filterable viruses, the effect on the different parts of the body, the specific selection of certain tissues, a condition called by Lipschutz "tropismus," no uniform anatomical picture for comparison or classification can be expected. Yet the study of the morbid anatomy of pleuropneumonia of cattle by the author, which has recently been confirmed by Boynton, shows in an interesting manner how specifically the virus affects the lymphatic system of the tissues with which it is brought in contact. The careful historical study of da Rocha-Lima, in connection with yellow fever, revealed facts which can undoubtedly be used for diagnostic purposes.

Inasmuch as the macroscopic lesions for some of the animal diseases, like hog cholera, horse-sickness, etc., show similarities to those found in the large group of hemorrhagic septicemias, it

would appear to be of interest to find out whether or not there exist more specific differences. Glaesser, Dammann and Stedefeder describe, in hog cholera, capillary, endothelial lesions combined with focal, small-cell infiltration and necrosis. In horse-sickness the stasis in the portal system combined with marked capillary and cellular degeneration of the liver and kidneys was predominant in the few cases studied by the author.

These few examples gave me the impression that probably valuable information could be obtained as to the mode of the pathogenic action of the filterable viruses by means of careful histo-pathological studies. Furthermore, proper attention should be paid to the primary and to the secondary lesions and their respective anatomical relation.

The problem of immunity in filterable viruses is interesting not only from a historic point of view, since smallpox and the anti-rabic vaccination are the most successful methods of immunization we know, but also on account of its great practical value in the eradication of destructive epidemics. The results which have been obtained in the various diseases are very encouraging, but one is unable to mention in a review *all* the facts which have been collected.

The existence of a natural resistance in filterable viruses as an absolute immunity against the diseases of one species of animal has been known for a long time (horses against contagious pleuropneumonia of cattle, cattle against hog cholera). An individual or racial immunity is frequently met with in experimental work with filterable viruses, particularly in hog cholera; also, according to Lowenthal, in pigeon epithelioma. In reality this immunity is probably an acquired one, as has been proven, particularly for sheep-pox (Nocard), hog cholera and rinderpest (Soberheim).

With the exception of fowl pest, most of the filterable viruses have a subacute course and therefore confer in many instances an acquired immunity. A complete immunity of permanent duration is only observed after a very severe attack or after repeated reinfection. The latter course, particularly, is very important in the establishment of a lasting immunity.

There are virulicidal substances produced, which can be tested in vitro and also particularly demonstrated in animal experiments, but in many instances these bodies do not seem to be of vital importance for the immunity. The appearance of the virulicidal substances is not regular, they may be absent at a time when an immunity is already established or the antibodies disappear from the blood when the immunity is of continuous duration. Many attempts have been made to apply the normal bacteriological immunity tests to filterable viruses, but contradictory results only have been obtained. The author had, in connection with the study of several diseases, an opportunity to review the various statements in the literature. In vaccinia all experiments have shown that the alexin fixation or precipitation tests do not give reliable results. The work of Heller and Tomarkins, Hylander, Bermbach and others for the alexin fixation on one side, and the result reported by v. Prowazek and v. Pirquet for the precipitin test on the other hand, can be confirmed. In this dermotropic disease not a serum immunity, but a cellular or "histogenous" (v. Prowazek) immunity, is important. Similar conditions will also probably be noted in epithelioma contagiosum of chickens; the report of Sweet on the presence of complement fixing antibodies has not been confirmed so far. In sheep-pox a serum immunity is probably present, but the conditions establishing a resistance against subsequent infection has only been superficially studied from a serological point of view.

In the serum of rabid or actively immunized animals, no complement fixing bodies have been found by Heller and Tomarkins, Friedberger, Moser and Baroni, Cinca, the author, and others, when using nervous tissues, whereas Nedrigailoff and Sawt-schenko and Zeller report positive results when using the extracts of the salivary glands as antigens.

These discrepancies, due to the preparation of the antigen, explain perhaps the failures which are reported with other filterable viruses. It is only by systematically testing the various tissues or fluids which develop antigenic properties in the animal that one can deny absolutely the non-existence of immune bodies which can be demonstrated by serological methods.

In some unpublished experiments the author found the complement fixation tests very unreliable for the demonstration of an existing immunity in contagious pleuropneumonia of cattle. Only in one naturally infected animal could immune bodies be detected. Poppe has studied this question very carefully and obtained fairly constant results with the alexin fixation test, contrary to the result of Schochowsky; the precipitate reaction of Fornet was even more reliable.

Some means to standardize the value of the protective sera against hog cholera, horse sickness, etc., or to differentiate by quick and less expensive methods, clinically or by post mortem examination, extremely similar diseases (hog cholera and swine plague) or to detect dangerous carriers (pernicious anemia), are certainly needed and it is not therefore astonishing that serological methods have also been applied and tested in these directions.

Lichtenheld thought he had demonstrated antibodies in horse-sickness; in a series of tests made by the author, no complement fixing antibodies could be detected. In hog cholera, with numerous antigens prepared by a multitude of methods, no uniform results were reported by Uhlenhuth and his collaborators, Hutyra, Buchanan and the writer. In foot and mouth disease and swamp fever, neither the complement fixation nor the precipitin reaction proved useful.

The cutaneous reaction being, when positive, a distinct indication of an existing immunity in smallpox, has only been tested in hog cholera (as far as I could review the literature) and there gave negative results. No confirmative information as to the value of the meiostagmin reaction of A. Ascoli for foot and mouth disease, is at hand, and one is hardly able to explain the nature of the antivirulent substances which are concerned in the immunity of filterable viruses. The few scattered, careful serologic tests permit the supposition that an entirely different group of virulicidal bodies is responsible for the protective properties of an immune serum. This ignorance as to the nature of the immunity is clearly felt in all attempts at immunization against

filterable viruses, even when they are the most successful we possess. Even in the immunization against rabies, the actual properties of the antirabic serum are unknown. The observations of Marie, Kraus, Remlinger and others indicate that the serum contains specific rabicidal substances and not, as Fermi explained, purely neurotoxic properties. Yet, the fact that chicken serum loses its normal antirabic effect when the bird is immunized with fixed virus, has still to be explained. Undoubtedly one is not justified in attempting to explain the immunity phenomena in filterable viruses by deductions from the mechanism of immunization in bacterial diseases; fundamental differences exist here, particularly with regard to the antigenic properties of filterable viruses.

Most of the filterable viruses causing septicemic diseases—with the exception of swamp fever and fowl pest—possess antigenic properties, the serum of the immunized animal having protective properties which can of course be demonstrated only by tests *in vitro* or *in vivo*, the latter method being the only reliable one. If, in bacterial diseases, the antigen is, on account of its unknown nature, characterized in a negative manner, the same can be said to be even more true for the filterable viruses. With one or two exceptions, it is entirely impossible to prove an antigen-antibody reaction by our present method, and only the facts (which have been gathered by numerous experiments) that the serum of an immune animal treated with the virus contains antivirulent substances, justify the conclusions that the virus acts as an antigen. The immunization in rinderpest, hog cholera, African horse-sickness, sheep-pox, etc., are examples to illustrate this statement, but when we consider the conditions found for the antirabic serum, vaccinia, contagious epithelioma in chickens, the nature of the immune bodies produced by antigens is an entirely different one. Such conditions are certainly to be expected on account of the marked biological differences of the viruses.

Aside from these facts, the possible mutation and mitigation of the virus by animal passage is important; the antigenic prop-

erties becoming either constant or entirely lost (lyssa, fowl plague, foot and mouth disease, epithelioma, etc.).

The antigenic properties can also be judged only from the immunity which is conferred by the injection or application of the unattenuated or attenuated virus or by the protective or curative properties of the sera of an animal which has survived a natural infection or has been artificially immunized and hyperimmunized. Whether, in the latter instance, the specific action of the serum is an antiparasitic or antitoxic one, has not as yet been decided for most of the filterable viruses.

The immunization experiments have shown that the filterable viruses act best as antigens when they are used in an unattenuated form of high virulence, best unfiltered and in comparatively large doses for the production of protecting sera. For active immunization the virus is attenuated by heat (seep-pox: Duolaux); (horse-sickness: Kuhn); or desiccation (rabies) or by chemical substances like glycerin (rabies). In some instances also a specially selected avirulent strain can satisfactorily be used for immunization (blue tongue of sheep). The mode and seat of infection is also important, particularly in pleuropneumonia; the injection of a culture at the root of the tail produces only slight reactions, but a lasting immunity, whereas the application of the same culture in any other part of the body is fatal in most cases. But, as shown by some observations of the author, the virulence of the strain to be used must be previously tested, otherwise even the inoculation at the tail can be harmful.

The few facts cited in this report have only been given with the intention of showing that an immunity is obtained by using the antigenic properties of the filterable viruses and that we are justified in applying the methods for protective immunization of animals, particularly in epidemic diseases.

Inasmuch as a passive immunization is successful in many bacterial diseases, this method was also used in the prophylaxis against rinderpest, hog cholera, foot and mouth disease and horse-sickness; but recent investigations have clearly shown that the artificial condition produced is only of such a nature as to lessen

the severity of a subsequent attack but not to prevent the invasion of the virus (rinderpest: Ward and Wood), (hog cholera: Dorset, Uhlenhuth and others). The value of the simple, passive immunization has therefore lost considerably.

The best possible immunity and protection can only be achieved by a combined active and passive immunization, or, if possible, by an active immunization alone. With regard to the latter, the possible creation of permanent virus carriers should be kept in mind. It is well known that in swamp fever an immune horse can eliminate the virus for years by the excretions, and Lipschutz has shown that also in epithelioma contagiosum the virus can be retained in the parenchyma for a long time. The practical importance of the healthy virus carriers has always been recognized for foot and mouth disease and influenza of horses; for several diseases the existence of such a condition is more readily supported and explained by epidemiological facts than the theory of transmission by insects. Considering these possibilities it is not astonishing that most of the careful experimenters hesitate to recommend the combined methods of sero-simultaneous immunization. To obtain a lasting immunity, the animal has to pass the disease. During the course of the immunization, the animal, like an infected one, can disseminate the causative agent. Citing an example in hog cholera only, Dorset and his collaborators have shown that the vaccinated hogs infect non-immune hogs which were brought in contact, and yet the sero-simultaneous method of immunization is recommended particularly for non-infected premises! No systematic experimental investigations have been conducted to determine whether, in addition to the so-called "Kummerer," apparently healthy hogs may also be carriers of the virus. Is the natural infection of piggeries sufficiently well explained by other epidemiological factors? Definite information is certainly necessary when deciding the policy of a sanitary control of the particular disease.

The results of Borrel, Bridré and Bouquet, in immunizing against sheep-pox with a sensitized virus indicate the way by which we can possibly avoid and control the disadvantages of an

active immunization. However, the number of reports is too small to permit conclusions for the other diseases in which these methods have been used.

For most of the specific dermato or neurotropic diseases due to filterable viruses, only the active immunization by specially mutated or otherwise attenuated viruses has proven to be really reliable and successful.

The immunization of dogs against rabies, after the method of Miessner and Pfeiler, being confirmed by Pokschischewsky, opens a broad field for practical application; we have not as yet lost hope, however, that perhaps the use of a sensitized vaccine is less dangerous than the intraperitoneal inoculation of large doses of fixed virus.

An active immunity frequently confers immunity to the offspring. An inherited immunity is particularly of practical importance in hog cholera (Reynolds) and sheep-pox (Borrel).

SUMMARY.

1. If the process of filtration is used as a means of classification, it must be employed with the greatest possible care. General uniformity of the methods applied should be attempted. In experiments, the time, the pressure, the temperature and the dilution of the virus to be filtered and of the filtrate, also the type of the filter candle, should be recorded. If possible, quantitative tests with the material before and after filtration should be conducted.

2. More experiments with the v. Prowazek-Giemsa ultra filter, also on comparative lines, will probably prove to be of great value in the study of various filterable viruses. In vaccinia and variola at least, a concentration of the virus has been achieved.

3. The morphological studies on "cell inclusions" should not only be extended to specific, "tropic" diseases, but also to septicemic diseases due to filterable viruses. The inclusions are not the disease-producing parasites, but cellular changes which represent the products of reactions of the cells towards the invading virus. The cell inclusions of several diseases have a characteristic structure which can be used for diagnostic purposes.

4. The so-called "Chlamydozoa" and, particularly, the "elementary bodies" deserve more attention than generally given. The possible misinterpretation of serum granules must be eliminated by microchemical reactions and by the use of ultra filters. The findings and results of Noguchi and Cohen on the cultivation of trachoma bodies should now form the basis for all such studies.

WILLIAM T. FLYNN.—National Stock Yards, Illinois, Branch No. 5, is mourning the loss of one of the pioneers of the bureau service at that station. Mr. Flynn passed away very suddenly on Saturday night, October 10th, at his residence, 627 North 8th street, East St. Louis, Illinois, his death being caused by heart trouble. Mr. Flynn entered the service at National Stock Yards, Illinois, in August, 1893, and served as tagger and stock examiner successively until the time of his death. While the entire period of his service was spent at National Stock Yards, Illinois, yet he was widely known throughout the bureau by the many who have seen service at that station. Mr. Flynn was an active and very enthusiastic member of the N. A. B. of A. I. E., and was chairman of the St. Louis National Stock Yards joint gatherings, while considering the organization of the National Association.

In the death of Mr. Flynn the Bureau loses the services of a conscientious and faithful employee, and the local branch loses the support of a beloved and ardent member.

DR. TERRELL HAS A FALL.—President J. B. L. Terrell, of the Tennessee Veterinary Medical Association, fell from the loft of his hospital in Dresden, Tenn., and fractured three of his ribs below the nipple and mashed three in near the spine between the shoulder blades during the latter part of October. The doctor was convalescent at the last writing, but not able to resume work. He has our sincere sympathy and that of the entire profession, we are sure.

DR. WESTRICK GOES TO NEBRASKA.—Dr. C. S. Westrick has gone from Courtland, Kansas to Oakland, Nebraska. We wish the doctor success in his new field.

DISEASES TRANSMITTED BY TICKS; THEIR CLASSIFICATION, TREATMENT, AND ERADICATION.*

Report by Sir ARNOLD THEILER, K.C.M.G., Director of Veterinary Research of the Union of South Africa, C. E. GRAY, Esq., M.R.C.V.S., Principal Veterinary Surgeon of the Union of South Africa, and W. M. POWER, Esq., M.R.C.V.S., Senior Veterinary Surgeon of Natal.

We propose to deal with the tick-transmitted diseases of South Africa, which play, or which have played, in the past a very important rôle in the economics of stock-breeding in the African sub-continent, and at one time baffled both farmer and veterinarian, although we are to-day in the position to deal with most of them in an efficient manner, since we now understand their causes, and the way in which they are transmitted, and since methods have been devised for combating them, based mainly on experiments and researches initiated or elaborated in this country.

The causal organisms of all South African tick-borne diseases are present in the blood-stream, and the diseases caused by them may be placed in three groups: (1) Disease due to an ultra-visible micro-organism, of which there is only one representative, the heartwater of ruminants; (2) those due to organisms living outside the corpuscles (*spirochætosis*); (3) those due to intra-corpuscular organisms (*Babesia*, *Nuttallia*, *Anaplasma* and *Theileria*).

The only representative of group (1), heartwater of ruminants, may be called an acute septicaemia with effusions in the pericardial and pleural cavities, ecchymoses on the serous membranes, and inflammation of the intestinal mucous membrane. Cattle, sheep and goats are susceptible. The virus, which is present in the blood plasma, passes through a Berkefeld filter candle, and must be of a very unstable nature, since its virulence is sometimes destroyed after twenty-four hours' standing. This disease is transmitted by the bont tick (*Amblyomma hebraicum*).

*Reprinted.—Tenth International Veterinary Congress, London.

The spirochætoses, which belong to group (2), are due to an organism found in all classes of stock, horses, cattle, sheep and goats, and as this has been shown in the laboratories of the Union to be communicable from one species to the other, we may reasonably conclude that the Spirochætoses are all caused by one organism, *Spirochæta theileri* (Laveran), which was first found in cattle.

Animals suffering from spirochætosis develop a high fever of but a few days' duration with no other clinical symptoms, at least in our experience. It never ends fatally, the only pathological lesion being a very slight anaemia, indicated in the sheep and goats by the presence of anisocytosis, polychromasia and basophilia. The spirochætes are transmitted by the blue tick (*Boophilus decoloratus*).

The diseases in group (3), due to endoglobular parasites, are generally called piroplasmoses, and can be subdivided into: (a) Babesioses (*Babesia bigemina* and *B. mutans* of cattle and *B. canis* of dogs); (b) Anaplasmosis (*Anaplasma marginale* and *A. centrale* of cattle); (c) Nuttalliosis (*Nuttallia equi* of horses); and (d) East Coast fever (*Theileria parva* of cattle). Of these, the diseases in subdivisions (a), (b) and (c) (in which infection persists in the blood of recovered animals) may be theoretically considered to represent a phylogenetic series in which the *B. bigemina* represent the complete form of a true piroplasm; the *Nuttallia* an intermediate form, and the *Anaplasma* the last stage, in which the typical protoplasm has disappeared, a view which receives some support from the fact that in the intermediary type, Nuttalliosis, parasites are frequently found in the blood which have little or no protoplasm, and such forms can be artificially produced by the administration of trypanblau.

Of the babesioses in subdivision (a), the one known in South Africa as redwater is identical with Texas fever (*Babesia bigemina*). Its introduction into South Africa is attributed to the importation in the early seventies of last century of immune Madagascar oxen into Natal, whence it spread all over the sub-continent. It is now present in all parts of South Africa, although

not on all farms, and judging from the observation that the degree of immunity enjoyed by recovered animals varies in different parts of the country, it is possible that we have to deal with various strains of babesia, although the introduction of cattle from Texas and Queensland into South Africa has shown that the immunity enjoyed by these cattle in the country of their birth holds good in South Africa.

Redwater may be described as a per-acute anaemia due to the dissolution of red corpuscles and liberation of haemoglobin, part of which is excreted by the kidneys and stains the urine. It is an acute disease accompanied by a high fever, which is of but short duration, often succeeded by so-called relapses, which are actually due to mixed infection, principally of *B. mutans* and *A. marginale*, but during which *B. bigemina* often reappears in the red blood corpuscles, as the latter organism remains in the blood-stream after the animal has recovered, although the form in which it remains is not exactly known. Redwater in South Africa is transmitted by the blue ticks (*Boophilus decoloratus* and *B. australis*). The next disease of this type occurring in cattle, due to *Babesia mutans*, is a fever with but low exacerbations lasting generally several weeks, and causing a slight anaemia, characterized by anisocytosis, slight polychromasia and basophilia. No deaths have yet been attributed to this cause, although it is frequently found in the blood of cattle which died of other causes. As in redwater, the immune animal retains the infection in its blood, but, unlike redwater, the organism can frequently be seen in the blood of apparently healthy animals. *B. mutans* is a small parasite; it is usually classified as a Theileria, the organism resembling this genus in size and shape, but it must be considered to belong to a different genus; it undergoes multiplication in the blood-stream, taking the form of rosettes, somewhat resembling those of *Nuttalli equi*, and for this reason it is a question whether it should not be classified under *Nuttallia*, which also persists in the blood of recovered animals in a form not yet known.

The babesiosis of dogs is from a pathological point of view

akin to the redwater of cattle. It is transmitted by the dog tick (*Hemaphysalis leachi*).

The anaplasmoses of cattle belonging to subdivision (b) cause what is popularly known as gall-sickness, and give rise to a subacute anaemia, frequently of a pernicious character; here the destruction of the red corpuscles does not take place rapidly, as in redwater or biliary fever of horses, but gradually, and it never leads to haemoglobinuria.

Two forms of anaplasmoses are recognized—a mild one which never leads to death, although the anaemia may be strongly pronounced, and a malignant one, in which about 50 per cent. of the cases end in death, with the symptoms of anaemia and icterus. This mild form is characterized by the presence of *A. centrale*, the malignant by *A. marginale*. The former is generally situated within the corpuscles, and is smaller than the latter, which is mainly placed on the margin. There is a difference of opinion about the protozoic nature of these anaplasms, and some authors are inclined to identify them with Jolly's bodies, but from this view we differ, basing our opinion not exclusively on the morphological appearance of the bodies, but rather on their biological behavior in connection with the disease. The view has also been expressed that the anaplasms belong to the life-cycle of the Babesiae, but experiments do not tend to support this view, as it is an established fact that babesiosis and anaplasmosis can be separated from each other, and are found separated from each other in various parts of South Africa. Further, we frequently find animals which are only infected with the one species of parasite, and which are accordingly only immune against the one present in their circulation. Anaplasmosis is transmitted by the blue tick (*Boophilus decoloratus*).

Nuttalliosis of subdivision (c) is found in the solipeds of South Africa, and is met with in all regions, having even a wider range than redwater. The disease is locally known as biliary fever, and may be described as an acute icteric anaemia due to the destruction of red corpuscles by the parasite, which not infrequently gives rise to haemoglobinuria. The immune animal's

blood retains the virulence, although microscopically no parasite can be detected. *Nuttallia equi* multiplies in the blood by the formation of rosettes with four partitions; it is transmitted by the red-leg tick (*Rhipicephalus evertsi*).

East Coast fever, which belongs to subdivision (d) is, from an economic point of view, the most formidable disease of recent times; it is caused by the parasite *Theileria parva*, found in its adult stage in the red corpuscles and in its developmental stages in the lymphatic system, causing a swelling of the lymphatic glands and the symptoms of toxæmia. It is further characterized by the extravasation of serous fluid into the cavities and blood on the surface of the various serous and mucous membranes and also into the tissues of the parenchyma of organs. The developmental stages in the lymphatic glands, known as "Koch bodies," are pathognomonic of this disease, and represent the schizogonic multiplicative forms.

In South Africa the acute form of East Coast fever is principally met with, but there exists also a subacute form, perhaps better called a "chronic" form, more frequently ending in recovery than in death. The latter is principally found in calves borne by immune cows in areas through which the acute disease has swept, and it is possible that inherited immunity is responsible for its existence. It is characterized by the presence of enlarged lymphatic glands in which, as long as the calf is suffering from fever, Koch bodies are met with, although sometimes in very small numbers. In cases of longer standing, when the parasites are absent, the animals are immune. It is commonly found that the blood of such calves does not show any parasites, or but few, which may be mistaken for *B. mutans*, and in such cases differential diagnosis is based on the presence of Koch bodies in smears from the glands. Recovery from the disease is succeeded by immunity, but the immune animal does not retain the infection in its system.

Theileria parva is transmitted by the following ticks of the *Rhipicephalus* group met with in South African cattle, i. e., *R. appendiculatus*, *R. evertsi*, *R. simus*, *R. capensis* and *R. nitens*.

PROTECTION AGAINST TICK-BORNE DISEASES.

Eradication of ticks means prevention of the diseases carried by them, but we propose to deal with this aspect of the problem later under the heading of "Eradication," and here we only refer to protection against these diseases, on the assumption that ticks are not destroyed, since under the conditions of farming obtaining generally throughout the greater part of South Africa animals are permanently exposed to reinfection through the agency of the tick.

We have already shown in the first part of this article that tick-borne diseases can be divided into two groups: to the one of these belong heartwater and East Coast fever, both of which are diseases from which recovery is complete, as recovered animals do not retain the infection in their system; to the other belong the piroplasmoses and spirochaetoses, in which the recovered animals are conveniently called "reservoirs of the virus." Under natural conditions the pastures on which these "reservoirs" graze constantly harbor infected ticks, hence all newly born animals, or all animals coming from clean areas, will contract the disease sooner or later through tick infestation. In such cases it is a well-known fact that the young stock, even although not born of immune animals, suffer less from these diseases than older or fully grown ones, and advantage is taken of this by using young animals for restocking, as it has been found that in this way farms grossly infected with ticks can be used for the rearing of stock; or the blood of animals which serve as reservoirs may be used for transmitting the disease to animals newly introduced into infected areas in preference to allowing susceptible animals to become infected through the agency of the tick.

Protection Against Babesiosis and Anaplasmosis in Cattle.

In former days inoculation, which was also practised in Australia, was frequently made use of in South Africa to immunize cattle against redwater. The method was a fairly reliable one when South Africa-born cattle were inoculated, but it had disastrous results when imported highly bred cattle were injected on

account of their high susceptibility. Animals inoculated in this way generally suffered from a mixed infection, and those which survived the redwater attack had in almost all cases to undergo subsequently an attack of anaplasmosis, often complicated with *B. mutans*, on account of the blood used for inoculation containing the germs of these diseases, as well as those of redwater. Formerly this second attack was considered to be a relapse of redwater, and was expected as a matter of course; and the enormous losses of imported cattle after inoculation were, undoubtedly, due in large measure to these secondary attacks of anaplasmosis. With the introduction of trypanblau, however, which proved to be a curative agent for the babesiosis, the position was improved, as this drug could most advantageously be used to cut short the redwater reaction and to entirely control it. It did not destroy all the parasites; they disappeared out of the blood-stream, and the resulting immunity proved to be sufficient to withstand the natural infection. Therefore, while in former days great care had to be taken to obtain a strain of redwater of less virulence, this was no longer so important, and the blood of almost any naturally recovered animal could be used. The injection of trypanblau in no way prevents the attack of anaplasmosis, nor does it, unfortunately, influence it in any way when injected at the beginning or during the reaction.

This is accomplished by passing the blood of an animal which has recovered from both diseases into a susceptible one, and by bleeding the latter at the first reaction and infecting a second one before the attack of anaplasmosis has had time to develop. Susceptible animal number two, as a rule, only develops redwater, and in this way a pure strain of redwater vaccine uncontaminated by anaplasmosis is obtained. It will readily be seen, however, that this method of immunization has a serious disadvantage, inasmuch as animals so inoculated have no immunity against anaplasmosis, and readily contract the latter disease when exposed to natural infection. This method has now been improved upon by the combination in the blood of the animals used for immunization of a strain of babesiosis with that of *A. centrale*, a va-

riety of *A. marginale*, which induces a much milder form of anaplasmosis than that caused by the ordinary type of anaplasma; *A. marginale* causes an average mortality of 50 per cent. Although this combined strain does not invariably protect inoculated animals against the effects of a later natural infection with the more virulent type of anaplasma, fatal results do not follow its use, a very high degree of immunity is conferred thereby, and the breakdowns which occasionally follow immunization are probably due to a sudden heavy tick infestation, to infection with a more virulent strain of anaplasma, or to attacks of other diseases, which lower the vitality of the animal and lead to a reappearance of the parasites in the circulation. Of this new blend of virus—containing *B. bigemina* and *A. centrale*—approximately twenty-five thousand doses have been issued by the Research Institute and have given very satisfactory results.

Protection Against Babesia Canis in Dogs.

Immunity against *B. canis* in dogs can also be conferred by the infection of susceptible animals with blood taken from a dog which has recovered from the disease, and subsequent control of the reaction by the use of trypanblau, but as a rule owners of these animals await the development of a natural attack of this disease, and then treat the affected animal with trypanblau.

Protection Against Nuttallia Equi.

While restocking was going on in South Africa after the war, serious losses occasionally occurred amongst imported equines from attacks of biliary fever caused by the presence of this parasite, and to combat these losses a method of immunization was devised in which the blood of young donkey foals which had recovered from this disease was used for inoculation purposes, as it was found the blood of these animals gave rise to a milder attack of biliary fever than the blood of recovered adults. The mortality from this form of inoculation was only 3 per cent., but the importation of equines fell off to such an extent after restock-

ing was accomplished, that the demand for this vaccine ceased, and it is no longer supplied by the laboratory.

Protection Against Babesia Mutans and Spirochætosis.

For *B. mutans* infection and for spirochætosis no protective inoculation is required; practically all animals become infected as soon as exposed to ticks, and all recover.

Protection Against East Coast Fever.

The preventive inoculation against East Coast fever, as practised in certain native areas in the Union, is based on the observation that an intra-jugular injection of spleen pulp or lymphatic gland of infected animals is followed in the majority of cases by attacks of the disease, from which 40 to 80 per cent. of the animals affected may recover—such a method must be considered as an emergency operation, the only object of the inoculation being to save the greatest possible number of cattle under the worst conditions, and to expedite the passage of the disease through a herd where dipping is impracticable. There are many objections to the method, the chief of which is that the relatively large number of animals left in an infected area creates a situation favorable to the perpetuation of the disease, owing to the maintenance of veld infection, through the deaths which subsequently occur amongst the susceptible progeny of the animals which have been immunized for the immunization of which it is not possible to make provision. As a consequence, the immunization of cattle against East Coast fever must either be followed by dipping or concentration operations to ensure the ultimate eradication of infection.

This method has only been extensively used in the native territories of the Transkei where, during the last three years, 251,424 cattle were inoculated, of which 40 per cent. recovered.

Protection Against Heartwater.

No satisfactory method of immunizing against this disease has yet been devised, the instability of the virus rendering experiments with this object in view exceedingly difficult.

ERADICATION OF TICKS.

The ticks which are responsible for the transmission of the blood diseases in South Africa require in their cycle of development, one, two or three hosts: *Boophilus decoloratus* is a one-host tick, *Rhipicephalus evertsi* a two-host tick, *R. appendiculatus*, *R. simus*, *R. nitens*, *Amblyomma hebraicum* and *Hæmaphysalis leachi* are three-host ticks. *B. decoloratus* remains about three to four weeks on one animal; it moults on it from larva to nymph, and from nymph to adult, and only leaves its host as a fully engorged adult. The adult hides in the grass, where the female lays its eggs, which hatch out in about six weeks' time, and the larvae wait on the top of grasses for a new host. They can live for about seven months. This tick can be easily eradicated either by starvation or by dipping. For the former purpose a fenced-in pasture has to be kept free of all live stock for at least eight months, when the larvae will all be dead. Under South African conditions game frequently frustrate this undertaking, and it is, therefore, not so reliable as dipping. Provided that the dip always kills the ticks promptly every time an animal is dipped, the dipping process would have to be repeated only once every three weeks, and after eight months a farm would be free of these ticks. The ticks which escape the dip are those on game, but when dipping is maintained they will finally be caught and destroyed.

R. evertsi lives in its larval stage usually in the depths of the ear; it moults there into a nymph, requiring about fourteen days to become fully engorged, when it loses its hold and drops to the ground. It moults here after about twenty to thirty days into an adult which, having found a host, attaches itself to the comparatively hairless parts under the tail. The female requires about six to ten days to engorge. Adult ticks which have not found a host can live fourteen months. The starving-out process accordingly requires at least fourteen months. In order to break the cycle of the tick by dipping, one bath in less than a fortnight would be necessary, but it would have to be of such a nature as to reach the depth of the ear, which can only be accomplished by

direct rubbing out by means of a swab. The adult can be reached more easily by dipping, although it is somewhat protected by placing itself under the tail; the dipping would have to be at least once every fourth day to reach all adults, and would have to be continued for at least fourteen months.

Of the *Rhipicephalidae*, the East Coast fever carriers, all three behave in a similar manner. The larvæ may only remain on the host for seventy-two hours and then drop off engorged; they moult in from sixteen to twenty-four days on the ground. The nymphs seek a new host, and may also drop after seventy-two hours' attachment, fully engorged: a nymph requires about the same time as an adult to moult. The adult female remains on its host four to ten days, and then drops fully engorged to the ground, where it lays its eggs. The larvæ are able to live about seven months, the adults fourteen months. Starvation will mean shutting up the farm for this period. Dipping to destroy the tick would have to be repeated at least once every fourth day to eradicate the ticks, and would have to be continued for fourteen months.

H. leachi behaves similarly to the *Rhipicephalidae*. It is the tick of the dog, and this animal would, in the first instance, have to be dealt with in the way indicated.

In *A. hebraicum* the various stages remain longer on the hosts, and the dipping intervals may be prolonged. In South Africa, the *Rhipicephalidae* are at present of the utmost importance; their destruction is in the first instance attempted—this is achieved by dipping at five-day intervals, and, for this purpose, a dip is used containing 2 lb. of arsenite of soda to every 100 gallons of water. This fluid kills all the ticks, and the process can be carried out for any length of time without doing harm to the cattle. Wherever the eradication of ticks is not aimed at, the intervals between dipping are longer, and the strength of the fluid is increased to $2\frac{1}{2}$ lb. per 100 gallons of water.

Practical experience has proved that dipping systematically carried out over a long period will destroy most ticks. The usual experience proves that in all but rare instances all ticks disap-

pear, the exceptions being on farms with game, sheep, goats and horses, which are not dipped, and a complete destruction of all ticks would be obtained, provided all animals were dipped. The dipping, as carried out in South Africa, has made it possible to reduce the number of ticks and to check their increase on those farms where it has been introduced and properly carried out.

ERADICATION OF TICK-BORNE DISEASES.

Having considered briefly the protection of animals against the mortality caused by tick-borne diseases, and the eradication of the tick itself—the ideal method of suppressing such diseases—we will now devote a little time to the consideration of practicable methods of stamping out these diseases, which we have seen belong to two groups of diseases—the one in which the immune animal acts as a reservoir, the other one where such is not the case. We propose to deal first with the latter class, of which East Coast fever is the most formidable one.

East Coast Fever.

There are three methods of dealing with East Coast fever, and they have all been used at different times and in different localities:

(1) The direct stamping out means the slaughtering of all cattle that are exposed to the same infection. The farm is fenced, and kept free of cattle for fifteen months, whilst other stock than cattle graze over the suspected field; it is true they maintain the tick life, but as these animals are not susceptible to the disease they do not propagate it, and ticks which drop off them when mature have freed themselves of all infection. After fifteen months restocking can safely be undertaken.

(2) The separation of infected cattle from uninfected ones, with a view to eradicating the disease, can be accomplished where sufficient uninfected ground is available for the movement of the latter. The method is based on knowledge of the following facts—that East Coast fever has an incubative period of from six to twenty-five days, with an average of thirteen, that the disease

has an average duration of twelve days, and that infected ticks, which have fallen from infected animals, require an interval of at least sixteen days for moulting before they can attach themselves to a fresh host. Operations are begun by taking the temperatures of all animals while running on infected veld. By the use of the thermometer infected animals are separated from healthy, and the latter are then moved on to clean veld; here they are kept for a period of sixteen days, during which time animals showing a rise of temperature are destroyed; and after the expiration of this period the animals whose temperatures have remained normal are moved to another clean camp before any of the infected ticks which may have dropped off in camp number one have had time to moult. Here they undergo a further detention of sixteen days, and, at the end of this period, they may be looked upon as healthy and moved out of the vicinity of the outbreak.

In this way East Coast fever was for a long time successfully dealt with in Natal, where the removal of about 30,000 head of cattle was carried out without an accident; but operations were unfortunately brought to an end by a native rising. This method is, however, only possible where non-infected ground is obtainable, and, after removal, the infected ground must be kept free of cattle for a period of at least fourteen months.

(3) Dipping may be called the most reliable method to cope with East Coast fever; it stops the disease immediately, and animals not infected on the first day of dipping are out of danger. The dipping should, however, be done every third day, but five days' interval may also be successful. The three days' dipping is necessary in order to kill the intermediary stages of the transmitting ticks, which even drop after seventy-two hours. Its good results are due to the fact that an infected tick does not immediately discharge the infection the moment it attaches itself, but in the case of the adult only after seventy-two hours; it remains then infective for one hundred and twenty hours, and it is only after this time that it has freed itself of the infection.

The effectiveness of the three days' dipping would indicate

that the nymphæ, which drop off after seventy-two hours' attachment, are infective only in the last hours of their attachment. The fact that adults are only infective between the seventy-second and one hundred and twentieth hours would indicate that animals other than cattle acting as hosts can transmit the disease if infected ticks detach themselves from the insusceptible host within this interval, but in actual practice it has not been found necessary to take this circumstance into consideration.

For the eradication of East Coast fever on a farm the dipping of cattle must be maintained for a period of at least fourteen months after the last death of an animal due to the disease. Only sick cattle are capable of infecting ticks; ticks off other animals do not transmit the disease; hence, it is not essential to have all ticks killed, provided the disease has once disappeared. Under the conditions of a possible reinfection, it is advisable to carry out the dipping regularly in order to keep the tick life in check until reinfection of the farm is excluded.

For the purpose of the three days' interval dipping process, a bath of reduced strength is sufficient—1 lb. of arsenite of soda for 100 gallons of water is recommended.

The present policy of the Veterinary Division in dealing with East Coast fever is the eradication of the disease—this is done by quarantining the infected farm for a period of fifteen months, and by dipping all cattle in intervals of three days so long as the disease is rampant. When the outbreak has been checked, the interval may be prolonged to five days, but may not extend to a week. The erection of a dipping tank and the periodical dipping can be made compulsory in proclaimed areas.

The number of dipping tanks in use at the present time in the various Provinces of the Union in which East Coast fever exists is: Transvaal, 371; Cape, 750; Transkei, 352; Natal, 2,600.

Heartwater.

Heartwater is a disease of the bush veld, that is of the warmer portions of South Africa, which are only inhabited by the bont tick, by which this disease is disseminated.

Eradication of this disease is only possible by starving out, provided all susceptible stock are removed from the farm. Transmission of the disease is affected both by nymphae and adult ticks, also by adults which have passed through their nymphal stage on an unsusceptible host. The latter point must be taken into consideration when starving-out operations are undertaken, and all animals which convey the tick must be excluded during the process, otherwise it is conceivable that infected adult ticks may be carried into an area from without by unsusceptible animals, and their exclusion must be maintained for a period of over twenty months, to ensure starvation of both nymphs and adults.

For the eradication of heartwater, dipping of cattle alone is sufficient to eradicate the disease. Sheep cannot so frequently be dipped as cattle; the cattle must collect the ticks and bring them to the dipping-tank. In areas where cattle are systematically dipped heartwater disappears; in this way sheep-farming in the coastal districts of the Cape has again become possible after it had to be given up on account of heartwater.

To the second group of diseases, in which recovered animals retain the power of infection by the agency of the tick, belong the babesiosis (redwater and *B. mutans*), spirochætosis and anaplasmosis of cattle, nuttalliosis of equines and babesiosis of dogs. Eradication of these is only possible under the condition that all ticks are destroyed. As stated before, this is least difficult in the case of the blue tick (*Boophilus decoloratus*), as it can be accomplished under favorable circumstances in eight months by persistent dipping. Under such conditions the young stock bred on the farm do not become infected and, therefore, acquire no immunity. This is proved by the fact that such young stock contract disease when removed to tick-infested farms, showing the possibility of eradicating the disease transmitted by the blue tick.

Under the conditions of South Africa of the present time, the total destruction of all tick life is only attempted in a few instances. The dipping-tank—in comparison with the whole sub-continent—is in existence on a comparatively small number of farms. Immunity of cattle is, as yet, required, and it may be

obtained by a small number of ticks which escape the dips and transmit the disease from immune adults to the newly born calf; or, in cases in which farms are entirely free, the difficulty may be overcome by inoculation of such stock, as explained before.

Of all disease-communicating ticks in South Africa the most difficult to eradicate is the red-leg tick (*R. evertsi*), the transmitter of biliary fever in equines. It lives on all classes of stock; its places of attachment, as explained before, are in the ear during the larval and nymphal stages, and under the tails as an adult, all of which are well protected places against the action of the liquid in the dipping-tank. Only mechanical removal will secure their disappearance from the ear; and, since sheep and goats are not dipped, and these harbor the same tick, it is evident that its destruction is well-nigh impossible. Notwithstanding this, the constant dipping of all cattle and of horses, where a large number are kept, has caused a considerable reduction of the numbers of this tick on farms where this is carried out; but, nevertheless, biliary fever occasionally makes its appearance.

The starvation method would have similar results in the case of the blue tick—that is, after eight months, fasting, all will be dead.

No endeavor has been made to eradicate the carrier of biliary fever of dogs—*Hemaphysalis leachi*—although some farmers dip their dogs regularly with their cattle, as the treatment with trypanblau is generally regarded as sufficiently effective.

CONCLUSIONS.

(1) Experience in South Africa has shown that it is relatively easy to eradicate the diseases of stock transmitted by ticks of the one-host type (*Boophilus decoloratus*), the fact of the animals being a reservoir of the virus being of no importance.

(2) The eradication of the diseases of which the immune stock does not act as a reservoir is a practicable undertaking, notwithstanding the difficulty of destroying all the ticks of the two and three-host species (*Rhipicphalidae* and *Amblyomma*).

(3) The eradication of the disease transmitted by the tick of

the two-host type—*R. evertsi*—in which the animal acts as a reservoir is, although theoretically possible, practically very difficult.

(4) The best means of eradicating the ticks is the periodical immersion in a solution of arsenite of soda of an average strength of 2 lb. to 100 gallons of water, contained in a suitable swimming-tank, and continued over a period of sufficient length.

(5) This method of eradicating the diseases by eradicating ticks should be recommended to all Governments engaged in colonizing tick-infested countries, as the most effective method of protecting pedigree stock imported for the improvement of native breeds.

(6) As a temporary method, and until a policy of eradicating ticks can be adopted, and the work carried out, protection by inoculation against diseases in which immune animals act as reservoirs should be attempted. For this purpose it is advisable that inoculation stations be erected in such countries as export cattle to countries in which tick-borne diseases exist, where the immunization against the more serious of these diseases, such as redwater and gall sickness (babesiosis and anaplasmosis) could be undertaken without any risk to the cattle of the country itself.

BREEDS OF DRAFT HORSES.—Under this caption, Mr. G. Arthur Bell, Senior Animal Husbandman, Animal Husbandry Division, U. S. Department of Agriculture, has compiled a bulletin, known as *Farmers' Bulletin 619*, in which he presents the most important features in connection with the breeds of draft horses in this country. He deals with the *Points of the Draft Horse*, the *Belgian*, with an excellent cut of both stallion and mare; the *Percheron*, also showing cut of stallion and mare; the *French Draft*; the *Clydesdale*, with cut of stallion and mare; the *Shire*, showing cut of stallion and mare, and the *Suffolk*, with cut of stallion. The bulletin comprises 16 pages, and is very interesting and instructive. It is published from the Bureau of Animal Industry of the U. S. Department of Agriculture, under date of November 16, 1914.

ANTHRAX.*

REPORT BY DR. W. H. DALRYMPLE, OF THE LOUISIANA STATE UNIVERSITY
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In this report it has been deemed unnecessary to enter into details with reference to the disease, anthrax, *per se*, as the main facts are already known to veterinary sanitarians generally, but rather to consider a few specific points concerning it, which may be of more or less general interest.

I have thought that mention of animate carriers of anthrax infection which have come under my own observation might serve a useful purpose, and I have been prompted to allude to this phase of the subject more particularly on account of some experimental work having been pursued at the Agricultural Experiment Station of the Louisiana State University, U. S. A., during a recent summer.

In the greater part of our more authentic literature concerning this disease allusion is made, in a more or less cursory manner, to various living agents as carriers and spreaders of the infection, such, for example, as different species of blood-sucking insects, carrion feeders of different kinds, both animals and birds; but, so far as I have been able to find, details of the results of actual tests with such are either lacking, or, at all events, somewhat meagre.

Owing to severe losses having been occasioned from time to time from anthrax in my own State of Louisiana, and in the Lower Mississippi Valley generally, I had become convinced that infection was being spread by the activities of certain living agents, chiefly carrion feeders, which previously had only been suspected, the suspicion, however, being quite strongly founded, on account of their periodic contact with anthrax carcases during seasons which afforded favorable climatic conditions for the

development of infection on areas where the disease had already existed, and where strict sanitary measures were not carried out. New areas and fresh foci of infection, and a wider general occurrence of the disease, could not be accounted for in the absence of carriers that could move from place to place, and thereby extend the territory of infection.

This led to some systematic work being undertaken at the Louisiana Experiment Station to verify, if possible, the suspicion previously entertained as to the probability of infection being disseminated through the medium of such agencies.

The subjects used in the tests were: The turkey buzzard (*Cathartes auro*), the carrion crow (*Catharista atrata*), the dog, pig, cat, opossum (*Didelphys virginiana*), and the common fowl.

The member of the Experiment Station staff in charge of this work was Dr. Harry Morris, Assistant Veterinarian and Bacteriologist, and the following is a brief summary of the results obtained.

The term "buzzard" will be used to include both the turkey buzzard and the carrion crow, as they frequently scavenge in company.

The experiments were conducted in a wire-screened room, with concrete floor and walls, which is a part of the "animal-house" of the station. Buzzards were confined in roomy cages, the bottoms of which were covered with heavy wrapping paper. After feeding, the paper was removed from the floors and the cages re-papered, and the faeces collected from the cages as soon after dropping as possible. Anthrax spores were used in three different ways, viz.: (1) Fed in meat-balls, which were thoroughly infected; (2) through infected carcases of rabbits; (3) injections of suspensions of anthrax spores made directly into the crop.

Cultures were made from pieces of faecal matter about the size of a common pea, placed in a test-tube with 10 c.c. of sterile water, and shaken up, and from this suspension agar dilution plates were prepared. Eighteen to twenty-four dilution plates were made from each specimen examined, and while fifteen

examinations were made from a single buzzard that had been ingesting anthrax material daily, not a single colony was found in 300 plates. This does not seem to agree with the statements, which are credited to Marchoux and Salimbeni, to the effect that "in Brazil the urubus, a species of vulture, after consuming the anthrax carcase, pass large masses of spores from the intestinal tract with their faeces," and yet the birds under consideration are a species of vulture.

Not succeeding in finding infection in the faeces, cultures were made from the contents of different parts of the digestive tract. Several buzzards were fed spores by the methods just described, and the birds destroyed at different periods after feeding (from four to twenty-four hours), with the result that no infection was found beyond the stomach, and but little in that organ.

These experiments would seem to show that anthrax bacteria do not pass through the digestive tract of the buzzard, and are, therefore, not disseminated in the droppings of this bird.

In order to test the question of mechanical distribution of infection through the contaminated feet and beak of the buzzard, anthrax carcasses of rabbits were fed, permitting the bird to devour them as it would under more natural conditions. After feeding, the cages were thoroughly cleansed and re-papered and clean roosts provided. At different periods, ranging from eight to seventy-two hours, after feeding, scrapings were taken from the feet and beak and cultured. As long a time as forty-eight hours after feeding and cleansing the cages virulent anthrax was obtained from both feet and beak. In a state of nature, however, it is possible that the infection would not be found after so long a time, as it would most probably have been washed off or otherwise removed.

Having found infection in the stomach contents, it was thought likely that the vomitus might contain the organisms and become another source from which the disease was spread. These birds are gluttonous feeders, and frequently throw up much of what they have swallowed.

Two hours after feeding on the anthrax carcase of a rabbit a

buzzard emitted a large amount of the flesh, which was carefully collected and cultured, and colonies of anthrax developed on every dilution plate used.

These results would seem to indicate, then, that after feeding upon an anthrax carcase the buzzard is capable of carrying infection for long distances and creating fresh foci in pastures, for example, where the disease had not previously existed, either through the medium of its contaminated feet or beak, or through the vomitus, or through the medium of drinking ponds infected in a similar manner.

Incidentally, it might be stated here that the results of this work at the Louisiana Experiment Station on the buzzard in relation to anthrax distribution has been very largely the means of nearly all of the Southern United States either repealing existing laws for the protection of this bird, or enacting legislation looking to its extermination.

In the case of the dog, spores were inoculated into meat-balls and fed in this way. Faeces were collected at different periods (from twenty-four to two hundred and forty hours after feeding), and cultures prepared in the manner previously described. Infection was found in the faeces one hundred and forty-four hours, or six days, after feeding the spores. Cultures obtained from the faeces destroyed rabbits as readily as the original culture, showing that the virulence was not decreased after having passed through the alimentary canal of the dog. Not only may the faeces be infected, however, but also external parts of the body which have been in contact with anthrax flesh, and infection may also be spread by parts of a carcase which dogs may carry away with them in their wanderings over the country.

A similar test was made with swine. Faeces were collected and examined at different times, ranging from twenty-four to one hundred and sixty-eight hours, and for a period of one hundred and twenty-four hours, or about five days, after feeding anthrax was found in the excrementitious matter.

In some countries swine are permitted to range quite widely, and through the medium of their faeces may distribute anthrax

infection over considerable areas, in addition to the possibility of their dying of the disease and creating fresh centres.

A few cultures were made from the excreta of the cat, which in this case had been fed with anthrax in meat daily for twenty-five days, with the result that for a period of three days after feeding the spores infection was found.

In the southern part of the United States, the Virginian opossum is quite common, and is a great feeder on carrion. Several tests were made with this animal showing that the faeces contained infection for a period of three days after feeding spores in meat-balls, and the virulence of the spores did not seem to be affected after passing through the digestive tract, as shown by inoculation tests on rabbits.

Experiments were also made with the common fowl, feeding anthrax spores, taken from agar slopes, at different periods of time. The faeces were carefully collected, both from the floor of the cage and direct from the digestive tract, and cultured as in the other cases, resulting in the development of the organism. All of the fowls used were destroyed and cultures made from the contents of the alimentary canal. In each case anthrax was found in the posterior part of the tract. Faeces contained anthrax infection for forty-eight hours after spores were fed.

In addition to carrying infection on the hairy exposed parts of their legs and bodies, flies pass in their excreta virulent infection after feeding upon anthrax material. A single "speck" from the common house-fly allowed to feed on anthrax spores was found to produce colonies in such numbers as to almost cover the entire surface of agar in a Petri dish.

My purpose in going into somewhat extended detail here is to emphasize the important part such carriers may play in the spread of anthrax infection, as shown by the experiments alluded to, and more particularly in countries where the enforcement of strict sanitary measures, especially with reference to the proper disposal of anthrax carcasses, may not obtain. Where such are more carefully observed, and under strict Governmental supervision—as is, no doubt, the case in European countries, and especially

where some of the carriers mentioned may not exist—such agencies in spreading infection may be, more or less, a negligible quantity. However, in those parts of the United States of America, and more especially in the semi-tropical latitudes which perhaps have suffered most from this disease in the past, live stock sanitary legislation has now been enacted; greater areas of land are being rapidly placed under cultivation and drainage, &c., with the result that the disease is now being much more intelligently controlled than formerly, and its serious consequences very much lessened.

In bringing about these more gratifying results, it is believed that, in addition to more thorough sanitary procedure, protective inoculation has played an important part. It may be said to be the general custom, in those States where infection is known to exist on, or contiguous to, farms and plantations, to vaccinate the live stock sufficiently early each spring to permit of immunity being conferred previous to the warmer season with its heat and moisture, which favors the development of the organism and transmission of infection to the animals.

Where vaccination has been carefully, regularly and intelligently practiced in this way, its salutary effects are often very apparent, as shown in comparison with instances where protective inoculation has not been so used in the same localities.

While many initial cases occurring in late spring, or early summer, seem to be of the intestinal form, and occasioned by ingestion during grazing, the disease appears to spread, later, as the carbuncular form through the instrumentality of various species of tabanids (horse-flies) that had been contaminated by feeding upon the virulent blood of previous victims of the disease. It is, perhaps, due to this form of transmission that vaccination seems of greater importance in our case.

In those years in which anthrax is more prevalent in the States bordering upon the Mexican Gulf, for example, it is usually found that tabanids are much more numerous; and it is often the case that the greater number of victims are to be found among the work animals (horses and mules) on the plantations and farms

that are not so much exposed to infection through ingestion, but more to inoculation by the puncturing proboscis of tabanids contaminated with infected blood from previous feeding. Or, in other words, it has been my personal experience that the earlier cases in a season have resulted from ingestion of the infection; while the later ones, and a greater and more rapid spread of the disease, have been brought about by external inoculation through the agency of these infected flies, which, during some seasons, are extremely numerous in the southern part of the country.

It is believed, however—or, at least, hoped—that, on account of the semi-aquatic life-history of the tabanids, the reclamation of large areas of wet, or swamp, lands, which at present favor the development and multiplication of these flies, of which there are quite a number of species, and with more thorough drainage and cultivation of the lands, the number of these insects will be very materially decreased, and the danger from them, as carriers of infection, relatively lessened.

In the United States the preparation of anthrax vaccines has been chiefly in the hands of commercial firms; and while the manufacturers of such products bear excellent reputations, there has not, until recently, been any Governmental supervision over the preparation of biologic products of this character for veterinary use. A law has now been passed by the United States Congress, however, placing a certain amount of inspection over commercial laboratories of this nature, and requiring standardization of such products for use on the lower animals; and it is believed that in the future increased provision will be made to insure greater protection to stockowners in the matter of purity and potency of such agents.

In this country, vaccines have been used in two forms mainly, viz., single and double-dose vaccines. The former is in the dry state, and is said to be composed of dead anthrax organisms; the latter, in lymph form (Pasteur method), or attenuated bacteria, and administered hypodermically as first and second lymphs. In either form, it is considered to require from three weeks to one month, from the date of the first injection, before immunity is

secured, and which lasts for one season of ten or twelve months.

Sobernheim's sero-simultaneous method of protection has been very little, if at all, practiced in this country that I am aware of.

Occasional outbreaks of anthrax occur in parts of the United States other than those referred to in the more semi-tropical latitudes, but it is difficult to suggest the sources of infection, unless, perhaps, through trade channels in contaminated commercial products, such as feeding stuffs, chemical manures having animal-tissue bases, or, maybe, through transportation of anthrax hides that have escaped the notice of sanitary authorities in the primarily-infected districts. Anthrax hides do, evidently, on occasion, reach the tannery districts, as outbreaks of the disease have been reported as occurring on meadows that had been overflowed by streams into which tannery-refuse-water emptied higher up.

While the effort is earnestly made by live-stock sanitary authorities, in the States in which anthrax infection is known to exist, to strictly enforce their regulations, especially with respect to the careful disposal of intact carcasses, it is frequently very difficult, with the funds appropriated, which are often totally inadequate, to effectually exercise police control, when such control is under State authority only. In this way it is possible for interstate shipments of anthrax hides to be occasionally made without the knowledge of the Federal authorities, and without the owners or shippers being aware that such traffic in, and transportation of, such hides is both illegal and dangerous.

On the other hand, the Federal regulations governing the importation of hides to the United States are almost equivalent to prohibition. United States Treasury Department Circular 23, Division of Customs, 1910, requires, in part, the following:

"A certificate signed by the American Consular Office for the district from which the hides were shipped, showing disinfection by one of the methods hereinafter described, will be required upon the entry of all hides of neat cattle which have not been subjected to a process of tanning, including calf-skins and hide cuttings or parings, or glue stock, with the following exceptions, which ex-

ceptions will not be made, however, in case of importations from districts where anthrax is present."

Then follows the classes of hides, &c., which form the exceptions; and under "Methods of Disinfection" there appears the following:

" Except in the case of hides shipped from districts where anthrax is prevalent, disinfection by any one of the three following methods will be permitted, under the supervision of a representative of the consul :

" (1) By immersion in a 1 to 1,000 solution of bichloride of mercury.

" (2) By immersion in a 5 per cent. solution of carbolic acid.

" (3) By exposure to the fumes of sulphur dioxide in a room tightly closed in which the hides shall be suspended separately in such a manner that there may be a free circulation of the sulphur fumes, and that all parts of the surface of such hides may be acted upon; provided, that there be at least four pounds of sulphur burned for every 1,000 cubic feet of air space, and the rooms shall be kept closed and the hides subjected to the sulphur fumes for at least six hours."

In the case of anthrax hides, we read :

" In the case of hides shipped from districts in which anthrax is prevalent, disinfection by immersion for at least thirty minutes in a 1 to 1,000 solution of bichloride of mercury only will be permitted, and disinfection by such method will be required of all hides of neat cattle and hide cuttings and parings, or glue stock, without exception, imported from any country, when shipped from districts in which anthrax is known to the consul to be prevalent at the time of shipment.

" Consular officers in districts in which anthrax is prevalent should refuse to certify invoices covering hides for shipment to this country unless such hides are disinfected in the manner above provided.

" Certificates of disinfection will be required upon the entry of hides, the product of countries other than those of North America, if imported via ports of such latter countries, and such

certificates shall also be required upon the entry of hides produced in any part of North America if imported via another country and landed and transhipped in that country.

"Hides of a character requiring disinfection under the provisions of this circular, which are not accompanied by a proper certificate of disinfection, will be treated as prohibited importations and refused entry. Disinfection of such hides on the deck of the importing vessel upon arrival in this country, or their entry for transportation to another country across American territory, will not be permitted for the reason that the landing of diseased hides from the importing vessel or their passage through the United States would tend to the dissemination of cattle diseases in this country.

"This circular does not apply to goat-skins, sheep-skins, or to articles manufactured from the hides of neat cattle.

"The regulations herein provided do not in any way modify or affect any regulations under the quarantine laws of the United States."

These regulations are not considered altogether satisfactory, as it is the claim of importing interests that compliance with them would be ruinous to the hides, and the latter are, therefore, not shipped to the American market.

I have it on authority, however, that during the past year there has been some modification of the requirements for the disinfection of hides offered for importation by the countries of Continental Europe. A large number of hides are shipped from Russia, and in view of the impracticability, as claimed by shippers, of disinfecting them in accordance with the provisions of the regulations, they have been permitted to envelop hard dried hides in strong bagging or matting, which materials must, just previous to their use, be disinfected by immersion in a 1 to 1,000 solution of bichloride of mercury in lieu of the immersion of the hides themselves. They are permitted, also, to ship green salted hides and skins in watertight casks, which, to a considerable extent, must overcome the possibility of contamination from them to other articles in shipping.

Unfortunately there is very little available data, so far, concerning the contamination of foodstuffs by hides and skins during the various stages in transit, such as railways, platforms, stations, ships, wharves, &c., although numerous articles and discussions on the subject would lead to the belief that such must at times occur. It might be, however, that some such inexpensive method of protection, as outlined in the modified requirements of the United States Government in regard to hides imported from countries of Continental Europe, would bring about an amelioration of conditions in this respect.

Touching the question of methods of sterilization which would be harmless to hides for subsequent trade purposes, and which seems to be the great objection to those at present in general use, it may be said that the Bureau of Animal Industry, United States Department of Agriculture, has conducted experiments from time to time on anthrax sterilization, over a period of several years, with the special object of obtaining an efficient method for destroying the anthrax spore in hides and skins without injury to the articles themselves; and for the past two years this work has been going on more or less continuously, but has not yet been completed.

It would seem, however, from published reports of the Seymour-Jones and the Schattenfroh methods of sterilization, that there is great promise for the ultimate solution of this extremely important problem, and which must be anticipated with immense gratification by all countries, with respect to their lines of trade that are prejudicially affected through importation of anthrax-infected articles, and the damage to such articles occasioned by previous, or present, unsatisfactory methods of sterilization.

TRAINING MEN FOR PUBLIC SERVICE.—In New York City, New York University has taken the lead in an attempt to bring about better government by training persons already in the city employ. It is bringing to those outside the University, as well as to those within, the training for public service which it has to offer.

REPORT OF THE COMMITTEE APPOINTED BY THE NEW
YORK HOMOEOPATHIC MEDICAL SOCIETY OF
THE COUNTY OF NEW YORK TO INVESTI-
GATE AUTOTHERAPY,
NOVEMBER 12, 1914.

Your committee was appointed at our February meeting, in obedience to the following resolution:

Inasmuch as Dr. Duncan's Autotherapy is being used in public hospitals, and inasmuch as the management of one public hospital objected to its use, owing to the fact that autotherapy had not yet received public recognition, a committee be appointed consisting of three members of the Volunteer Hospital, three members of the County Society and three members appointed by Dr. Duncan, to investigate his methods and report.

The committee really consists of six members, Dr. Duncan having selected three members of the Volunteer Hospital staff to represent him.

For the County Society, Drs. Seward, Harrington and Laidlaw.

For Dr. Duncan and the Volunteer Hospital, Drs. Dieffenbach, Gillingham and Stearns. Owing to his absence from the city, Dr. Stearns was unable to attend the meetings of the committee and does not sign the report.

Your committee realized the pitfalls that await one sitting in judgment on a system of therapeutics. They have tried to profit by the errors of the past. They have remembered that many of our best therapeutic measures were at first misunderstood, denounced and won recognition slowly, while methods of treatment introduced under the glamor of great authority have sometimes proved illusions. They have kept in mind the saying of the great Hippocrates that in the medical art, experience is fallacious and judgment is difficult. They do not pretend to say the last word in autotherapy, but to report to the society its present status in the medical world and especially in response to the resolution

under which the committee was appointed, *whether the treatment has gained sufficient recognition as to warrant its practice in hospitals in this city.*

Your committee finds that autotherapy is now being practiced by many physicians of high standing all over the country, some holding distinguished positions in medical colleges and hospitals, including members of our own society. When the usual rules for making the instruments aseptic are observed, and the directions of Dr. Duncan as to the size and repetition of the dose are followed, there appears to be no danger in its use, or no more danger than in the use of tuberculin, and the sera and vaccines that are in daily use among us. This being so, we believe that physicians in all hospitals should be permitted to use the treatment according to their judgment just as they are permitted to use other therapeutic measures, even those which are dangerous in unskilled hands.

The principal of treating disease by a minute dose of its own poison needs no elaboration by this committee. It is being practiced in some form by physicians of both schools of medicine all over the world. This principal is the beacon-light to-day of experimental and preventive medicine. In this and other societies, the chairman of your committee has expressed the opinion often that the method of applying this principal devised by Dr. Duncan is the ideal method from a theroetical standpoint. It places in the hands of all physicians, even those who are far removed from a laboratory, and for all patients, even those who are unable to afford the expensive bacteriological preparations, a simple and accurate method of giving a dose, strictly autogenous undeteriorated by heat or preserving chemicals, free from delay, the uncertainty and possible error or contamination of bacterial culture. With this opinion your committee is in accord. We found that we were unanimous in our belief that the principal was sound. It remained for us to consider how far this principal had been put in safe operation.

Your committee found that the practice of autotherapy had been developed in two fields: in veterinary and in human therapeutics.

Veterinary Autotherapy.—In May, 1914, your chairman attended a meeting of the Veterinary Medical Association of New York City. A paper on autotherapy was discussed by many members. Every speaker who had tried the treatment endorsed it and quoted cases of the cure of animals that had convinced them of its value. At that meeting there were no reports of any damage done by the treatment.

Some months later, in October, three well-known veterinary surgeons kindly attended a meeting of your committee and testified as follows:

Dr. D. J. Mangan, in his position as Chief Veterinarian of the Department of Street Cleaning of New York City, and other appointments, has in his charge, four thousand horses. He has used Dr. Duncan's autotherapy for four years in all forms of sepsis, and endorses it highly. In some disorders of the horse, as in ozena or nasal gleet, acute infections of the hoof and fistula of the dorsum, autotherapy is by far the best treatment and in some cases the only successful treatment. He believes that he probably cured one case of glanders. In the prevention of sepsis in wounds of the horse, he values autotherapy highly.

Dr. George J. Goubeaud, of Flushing, Long Island, veterinarian to the Department of Health, to the Long Island Kennel Club and to the First Cavalry has used autotherapy for two years, and values it highly, especially in pus infections. He specifies necrosis of the withers, involving the tendon sheath, as conditions formerly incurable but now curable by autotherapy. He has seen no bad results.

Dr. C. W. Shaw has used autotherapy for three years in about one hundred cases. He endorses the treatment thoroughly and has seen no bad results.

Your committee places a high value on these reports of the cure of sepsis in animals. Many of the infections in the lower animals and in man are caused by the same bacteria. The law of infections, immunity and cure seems to be the same for all animal tissues. Practically all our bacterial remedies were worked out on animals. It is found that the results of these experiments can usually be transferred directly to human therapeutics.

Turning to the application of the treatment to human beings, the evidence may be classified as follows:

1. Articles in medical journals.
2. Presentation of patients.
3. Testimony of physicians using the treatment.

1. Articles, both by Dr. Duncan and others, endorsing autotherapy have been published in many of the most conservative journals in both schools of medicine; as the *Medical Record*, the *New York Medical Journal*, the *Boston Medical and Surgical Journal*, *The Practitioner* (London), the *Medical Era*, *Medical Brief*, *Medical Sentinel*, *Lancet-Clinic*, *Paris Medicale*, *Practical Medicine* (Delhi, India), *American Practitioner*, *North American Journal of Homoeopathy*, *New England Medical Gazette*, *Chironian*, *American Veterinary Review*, *British Veterinary Journal*, *American Journal of Surgery*, *Medical Times*, *Therapeutic Record*, etc.

Your committee does not think that this publication carries with it the endorsement of the treatment by the journal, but it does show that the editor thought the claims of the new method of sufficient importance to bring it before his readers, and so much in harmony with current medical thought that the reputation of his journal would not suffer by its publication.

2. *Presentation of Patients.*—Dr. Duncan presented seven patients who had recovered under autotherapy from the following disorders: Acute appendicitis, catarrhal bronchitis, puerperal sepsis, infected finger, compound fracture, furunculosis, acute articular rheumatism with complicating endocarditis. Dr. John Arschagouni presented one patient who had suffered for many weeks from obscure fever with eventual appearance of many abscesses. The patient had been seen by Dr. Laidlaw and Dr. Helmuth, both of whom thought the case serious and recovery doubtful. He recovered completely under Dr. Duncan's treatment.

Dr. Dieffenbach presented himself as an example of cure by autogalactotherapy, having been cured of a persistently recurring ivy poisoning by drinking the milk of a cow that had been fed on

poison ivy. The same treatment had been successful in the case of a child.

Dr. Duncan offered to present many more patients, but the Committee believed that the sifting of the evidence and ascertaining the details of these cases would require far more time than it had at its disposal.

3. *Testimony of Physicians Using the Treatment.*—Your committee has kept in mind the uncertainty of all human testimony and the liability of physicians like other men to be carried away by enthusiasm and deceive themselves honestly as to the value of therapeutic measures. Nevertheless it has seemed to your committee to be important evidence of the value of the auto-therapy that educated and experienced physicians all over the country are using the treatment in hospital and private practice. Testimony of this class is presented in letters to Dr. Duncan and the verbal testimony of physicians who attended the meetings of the committee.

The very number of letters is impressive. We have seen five hundred letters from physicians all over the country endorsing autotherapy and relating instances of cure of patients whose disorders had proved refractory to other methods of treatment. Some of these physicians had used the treatment on themselves. The cases are too numerous to quote here. The letters are also too numerous and from too many well-known men to permit the thought that they were gotten up for the committee's perusal. Your committee accepts them as competent evidence. Among the writers we recognize the names of homoeopathic physicians whom we know to be honest and competent observers.

Perhaps even more convincing evidence of the value of autotherapy is supplied by the physicians who attended the meetings of the committee, most of them well-known members of this County Society. They testified as follows:

Dr. J. Wilford Allen.—Case of chronic cough and bronchorrhea, and a case diagnosed by Dr. Carleton as tubercular epididymitis with gleet. Prompt improvement and eventual recovery under autotherapy. Dr. Allen thinks the committee will make a grave mistake if it reports unfavorably of the treatment.

Dr. R. F. Mills has used autotherapy in one hundred cases in the past four years, especially at the surgical and skin clinic of the South Third Street, Brooklyn Homoeopathic Dispensary. In pus cases he has had very good results, only a few failures and no bad results. He values the treatment highly.

Dr. Eric von der Goltz has used the treatment since May, 1913, in seventy cases, mostly gynecological. He values the treatment highly. Had bad results in two cases of tuberculosis, but thinks the dose was too large.

Dr. Thomas B. Kinney, graduate of Edinburg University, and for sixteen years in the British Civil and Military Service, has used autotherapy for one year. He reports five cases with good results. He thinks highly of the treatment.

Dr. E. Wilton Brown has used autotherapy for four years in pus infections and gonorrhea. For pus cases no treatment equals it. He has seen no reactions and no bad results.

Dr. John Arschgouni presented the patient already mentioned. He values the treatment highly.

Your committee has not attempted to give all the available evidence concerning autotherapy. Time and space forbids. It has sought rather that the evidence should be accurate and authentic.

Perhaps the best illustration of the opinion of the committee is given in the words of each member when summing up at the last meeting as follows:

Dr. Seward.—Impressed by the testimony. Worthy of use by all physicians.

Dr. Dieffenbach.—Good treatment in septic and toxic cases in proper doses and technic.

Dr. Gillingham.—The principal is reasonable, logical and scientific. The evidence is convincing that the treatment is good.

Dr. Harrington.—In selected cases a good treatment, where systemic poisoning extends beyond the reach of local measures.

The technic requires more precision in preparation and the size and the repetition of the dose.

The opinion of the chairman has already been given.

Remarks on Technique.—Your committee believes that the

technic of autotherapy requires further elaboration and precision in the size of the dose and the interval between doses. However the most important question before us is not the crudeness of the method, but the soundness of the principle. Crudeness of method and uncertainty of dose are common to all new treatments. The early bacteriological methods were crude enough and there is no agreement yet as to the size and repetition of the dose of tuberculin and other remedies that have been before the profession for many years. Crudeness of method will be corrected by time and experience, but no refinement of method and no improvement in technic should be permitted to take from our fellow-member, Dr. Duncan, the credit as being the first to see the principle clearly and by his own industry and ability work out a *safe and practical technique*, starting autotherapy on a sound practical basis.

Your committee deems it its duty to commend Dr. Duncan for his good judgment in keeping his methods of autotherapy free from the taint of quackery and charlatanism. He has had no secret formulas, nor has he claimed superior skill. His work and thoughts have been given freely to all inquirers. He has been actuated by a high sense of professional honor and responsibility to the sick. There has been no effort to trade commercially on the ignorance and credulity of the people. On the contrary he has gone boldly among his fellow physicians and challenged the judgment of those whose education and experience make them competent judges of his work.

For thus resisting the temptation to exploit his work among the people, when his fellow physicians were hostile and his friends indifferent, we owe him sincere thanks and praise.

Finally, the committee wishes to thank Dr. Duncan for his frank and friendly co-operation in this investigation and also to thank sincerely the veterinarians and physicians who assisted in its work.

(Signed) DR. GEORGE F. LAIDLAW (Chairman),
DR. PERRY J. SEWARD,
DR. WILLIAM H. DIEFFENBACH,
DR. HORACE P. GILLINGHAM,
DR. GOVE F. HARRINGTON.

THE LYMPH GLANDS OF CATTLE.*

By L. K. GREEN, D.V.M., VETERINARY INSPECTOR AT THE PENLEY PACKING COMPANY, AUBURN, MAINE.

Some time ago I was asked by our worthy president to prepare a paper for this meeting on the subject of lymph glands. I have accordingly taken for my subject the lymph glands of cattle.

Usually the first glands presented for inspection are those of the head and region of the throat. Here we find the submaxillary, parotid, postpharyngeal and superior cervical lymph glands.

The *submaxillary* lymph glands are situated superficially in the inferior maxillary space, between the inferior maxilla and the submaxillary salivary gland. The afferent vessels are derived from the anterior nares, the muscles of the lips, cheeks, tissues of the anterior maxillary space, and from the anterior portion of the tongue. The efferent vessels pass to the superior cervical lymph glands.

The *postpharyngeal* lymph glands are located at the base of styloid process of the occipital bone. The efferent vessels are derived from the posterior nares, the cranial cavity, the posterior portion of the oral cavity, the tonsils and the pharynx. The efferent vessels pass to the superior cervical lymph glands.

The *parotid* lymph gland lies on the masseter muscle, at the superior and anterior border of the parotid salivary gland. The afferent vessels are derived from the anterior and lateral portions of the head and from the temporal and parotid regions, the cranial cavity, the base of the cranium, the tongue, the soft palate, the esophagus and the larynx. The efferent vessels pass to the superior cervical lymph glands.

The *superior cervical* lymph glands are located at the extreme

*Read before the Maine Veterinary Medical Association, at Lewiston, October, 1914.

superior end of the submaxillary salivary gland, just under the styloid process of the occipital bone. The efferent vessels are derived from the immediate surrounding tissues and from the efferent vessels of the three preceding glands. The efferents pass to the inferior cervical glands.

The next presented for examination is the abdominal viscera. Here we find the mesenteric, colic, portal, gastric and splenic lymph glands.

The *mesenteric* glands are found in the folds of the mesentery, near the lesser curvature of the intestine, forming a continuous chain of glands extending from the abomasum to the cecum. The afferent vessels are derived from the lymph and chyle flexures located in the submucosa of the intestines. The efferent vessels pass to the receptaculum chyli.

The *colic* lymph glands are embedded among the large intestines. The afferent vessels are derived from the walls of the colon. The efferent vessels pass to the receptaculum chyli.

The *portal* lymph glands are located on the posterior surface of the liver, embedded in the fatty cushion surrounding the vessels entering the portal fissure. The afferent vessels are from the greater portion of the anterior surface, all of the posterior surface and from the entire glandular portion of the liver. The efferents pass upward along with those of the stomach to empty their contents into the receptaculum chyli.

The *gastric* lymph glands are located in the folds and fissures of the divisions of the compound stomach, and along the course of the gastric blood vessels. The afferent vessels are derived from the walls and from the submucosa of the stomach. The efferents pass upward to the receptaculum chyli.

The *splenic* lymph glands lie at the hilus of the spleen, between the folds of the splenic ligament. The afferents are derived from the superficial and deep portions of the spleen. The efferent vessels pass to the receptaculum chyli.

This brings us to an examination of the lymph glands of the thoracic viscera. Here we find the bronchials and mediastinals.

The *right anterior* bronchial is located at the junction of

the bronchus of the cephalic lobe of the lungs with the trachea. The right posterior bronchial is found at the junction of the bronchus of the right main lobe of the lung with the trachea. The left bronchial lymph gland is located on the left side of the trachea anterior to and near the left bronchus, and is normally the largest of the bronchial lymph glands. A small gland known as the posterior or middle bronchial lymph gland is sometimes found located at the postero-inferior part of the bifurcation of the trachea into the two main bronchi. The afferent vessels of these glands are derived from the lungs. The efferents pass partly to the thoracic duct and partly to the posterior mediastinal lymph glands.

The *anterior mediastinal* lymph glands are located in the folds of the anterior mediastinum along the inferior and lateral parts of the trachea and esophagus anterior to the heart. Their afferent vessels are derived from the pleura, esophagus, pericardium, heart and thymus gland. The efferents pass to either the thoracic duct or to the right lymphatic vein.

The *posterior mediastinals* are made up of a chain of from eight to twelve lymph glands of varying size located in the postcardial mediastinum along the superior wall of the esophagus. The afferent vessels are derived from the pleura of the surrounding tissues, the diaphragm, the esophagus, the anterior face of the liver, and the efferent vessels of the bronchial lymph glands. The efferent vessels pass to the thoracic duct.

This brings us to the examination of the lymph glands which remain attached to the dressed carcass. It is usually more convenient to commence with those located in the posterior parts.

The *anal* lymph glands are very small, located in the fatty tissue on the floor of the pelvis. The afferent vessels are derived from the anal region, the root of the tail and surrounding tissues. The efferent vessels pass to the sacral and sublumbar lymph glands.

The *sacral* lymph glands are very small, located along the inferior face of the sacrum, near its lateral border. Their afferent vessels are received from the coccygeal region, pelvic

region, rectum and internal genital organs. The efferents pass to sublumbar glands.

The *sublumbar* lymph glands are located on the side and ventral surface of the lumbar vertebrae, along either side of the abdominal aorta, embedded in fatty tissue. The afferent vessels are derived from the dorsal abdominal wall, the internal genital organs, the urinary apparatus and from the efferent vessels of the sacral, the iliac, the inguinal and the popliteal glands. The efferent vessels pass to the receptaculum chyli.

The *internal iliac* lymph glands are located at about the upper third of the pelvic arch. Their afferent vessels are received from the precrural and superficial inguinal lymph glands, the walls of the posterior abdominal cavity, the pelvic cavity, and from the rectum, internal genital organs, bladder, pelvis and sacrum. The efferent vessels pass partly to the sublumbar glands and partly to the receptaculum chyli.

The *precrural* lymph glands are located in the loose cellular tissue of the flank, just above and inward from the femerotibial articulation. The afferent vessels are derived from the abdominal wall and the lateral surface of the posterior limb. The efferent vessels pass to the circumflex iliac and sublumbar lymph glands.

The *flank* lymph glands are located subcutaneously in the upper part of the flank. Their afferent vessels are obtained from the surrounding superficial tissue. Their efferents pass to the precrural or to the circumflex iliac glands.

The superficial inguinal lymph glands are located in the male at the neck of the scrotum, beside the penis and in front of the inguinal ring. In castrated males they are embedded in the cod fat.

In the female these glands are known as the supra-mammary lymph glands, and are located at the supero-posterior part of the mammary gland. The afferent vessels in the male are received from the abdominal wall, the thigh and external genital organs, and in the female from the abdominal wall, the thigh and the

mammary gland. The efferent vessels pass to the small deep inguinal glands and to the internal iliac lymph glands.

The *renal lymph* glands are located in the fatty tissue in the hilus of the kidney. Their afferent vessels are received from the kidneys. Their efferent vessels pass to the receptaculum chyli.

The *dorsal lymph* glands are located in the intercostal spaces, imbedded in the muscles and covered by the costal pleura. Their afferent vessels are derived from the dorsal vertebra, dorsal muscles, parietal pleura, intercostal muscles, and diaphragm. Their efferent vessels pass to the thoracic duct.

The *prescapular lymph* glands are located on the anterior border of the shoulder, above the scapulo-humeral articulation, and covered by the mastoido-humeralis muscle. Their afferent vessels are received from the neck, shoulder and upper and lower leg. Their efferent vessels pass to the inferior cervical lymph glands.

The *inferior cervical* or prepectoral lymph glands are located at the entrance to the thorax, anterior to the trachea, and extending into the thoracic cavity. Their afferent vessels are derived from the surrounding tissues, the shoulder, the face, arm and the efferent vessels of the lymph glands of the cervical region. Their efferent vessels on the right side empty into the great lymphatic vein, and on the left into the thoracic duct.

In the preparation of this paper I am indebted to Mohler and Eichhorn's translation of Edelman's *Meat Hygiene*, and Buckley and Castor's article on "The Regional Lymph Glands of Food Producing Animals" in the twenty-seventh annual report of the Bureau of Animal Industry.

NOTICE TO OFFICIAL DELEGATES TO A. V. M. A.—It is important that all societies electing official delegates to the American Veterinary Medical Association Meeting in New Orleans, should advise the Secretary as soon as possible, that the names of the delegates and the Associations they represent, can be inserted in the official program of the meeting.

Any member having any information that should be properly included in the official program of the meeting should also send it in as soon as possible.

Yours very truly,

4753 Ravenswood, Chicago, Ill. N. S. MAYO, Secretary.

SULPHOCARBOLATES IN THE TREATMENT OF WHITE DIARRHEA (BACILLARY FORM) OF YOUNG CHICKS.

BY GEORGE D. HORTON, BACTERIOLOGIST, OREGON AGRICULTURAL COLLEGE,
CORVALLIS, ORE.

In a recent publication, "Poultry Diseases," by B. F. Kaupp, the following statement is made (page 94):

"A diet of sour milk is said to reduce the loss from white diarrhea fifty per cent., but as the treatment here outlined will reduce it ninety per cent., the sour milk treatment is not worth considering."

Further, on page 99, referring to the treatment outlined:

"The following solution was to be kept before them (the chicks) from the time of hatching to four weeks of age, and then given twice a week for the next few weeks: Zinc sulphocarbo-late, fifteen grains; sodium and calcium sulphocarbo-late, of each seven and one-half grains; bichloride of mercury, six grains, and citric acid, three grains. This quantity was dissolved in a gallon of water. The result was that eighty per cent. of the next hatch was saved."

In attempts to find a suitable remedy or possible cure for white diarrhea in young chicks the author took occasion to conduct the following experiments as a test of the efficiency of the treatment as recommended above.

Experiment 1:

Thirty (30) chicks, 48 hours, were divided into three lots—lots 1, 2 and 3 of 5, 5, and 20 chicks, respectively.

Lot 1 (5 chicks), check lot, received only five drops of the sulphocarbo-late solution.

Lot 2 (5 chicks), check lot, received only three drops of a 24-hour 37 per cent. C. bouillon culture of *B. pullorum*. Salem (Ore.) strain

Lot 3 (20 chicks), received five drops of the sulphocarbo-late

solution, also three drops of the bouillon culture of *B. pullorum*, Salem, Ore.

NOTE—The chicks in lot 3 received the sulphocarbolate solution first and then the culture of *B. pullorum*. All of the chicks received the same general treatment, care and feeding, except that the chicks in lots 2 and 3 had before them constantly the sulphocarbolate solution.

Results—Within ten week from the beginning of the experiment all of the chicks in lots 2 and 3 were dead. Microscopic examination of the dead chicks revealed the presence of the organism *B. pullorum*. One of the chicks on lot 1 died, but upon examination no *B. pullorum* was found.

Experiment 2:

Sixty (60) chicks, 48 hours old, were divided into three lots—lots 1, 2 and 3 of 15, 15, and 30 chicks, respectively. The method of handling and treatment was the same as in Experiment 1.

Results—At the expiration of ten weeks' time all but three (3) of the chicks in lot 2 were dead and all but seven (7) in lot 3. Microscopic examination of the dead chicks of lots 2 and 3 revealed the presence of the organism *B. pullorum*. Two (2) of the chicks in lot 1 died, but upon examination no *B. pullorum* was found.

Summary—A total of fifty (50) chicks received the sulphocarbolate treatment, with the result that at the end of ten weeks only seven of the chicks so treated remained alive. From the manner in which the chicks died off and from the general appearance of the seven that remained alive it seems evident that sulphocarbolates in the treatment of white diarrhea (bacillary form) have very little, if any, efficiency.

THE BULLETIN OF COMPARATIVE MEDICINE AND SURGERY, VOLUME 1, No. 1, reached us recently, and the reading of it was much enjoyed. This new enterprise in veterinary journalism is to be issued quarterly by the Indiana Veterinary College, and we are looking with pleasurable anticipation for No. 2. The first number contains 30 pages of interesting material and is an excellent beginning.

REPORTS OF CASES.

BLADDER STONE.

By HERBERT HOOPES, V.M.D., Bel Air, Md.

History: About two years ago roan geld, about 18 years old, weighing 1,150 pounds, developed colicky symptoms, and as the writer was unable to attend, a brother practitioner was called, and located a small stone near the end of the penis, which he was able to remove with forceps.

May 13, 1914, about 8:30 p. m., writer was called. The owner thought the horse was having same trouble.

Upon making rectal examination, found bladder much distended, and a large stone lodged in entrance to urethral canal, which was manipulated back into bladder, giving instant relief. However, the owner was advised that only an operation would give permanent relief, and that such an operation was attended with considerable risk. Owner decided to wait.

June 26th, condition recurred, and twice more between that date and July 21, when the horse was cast, chloroformed and prepared for operation.

An incision about 3 inches long was made, starting about $2\frac{1}{2}$ inches below the anus, and running parallel with the urethral canal, into same, cutting down onto catheter.

Using a pair of heavy saw forceps, the stone was grasped and an attempt made to crush it, but apparently without success; and as this would necessitate stretching the urethral canal about 4 inches, it seemed like almost an impossibility, but finally succeeded in breaking into two pieces, about equal in size, and took it in that shape.

Used five stitches in the urethra, after flushing bladder well with permanganate solution 1-5000, and left rest of tissues open.

The old fellow came out from the chloroform nicely, and in two hours was acting like a colt, and continued to do so, until he was put to work 3 weeks later.

As he was quite a distance from home, I saw him the next day, catheterizing him, and flushing bladder, and a week later when I removed the stitches. The owner, however, informing me daily over 'phone of his condition.

The stone weighs 4 ounces, and measures $7\frac{1}{2}$ inches around or across the ends, and 6 inches around the middle.

In fifteen years' practice this is the first case of its kind that I have come in contact with, knowingly.

EXTENSIVE INTERNAL INJURIES TO DOG REVEALED BY POST MORTEM.

By CRITTENDEN Ross, D.V.M., New York, N. Y.

Answering a hurry call to attend a dog that had been injured by being run over by a grocer wagon, I found an aged collie surrounded by the entire family and several friends, all very much interested in the dog. I had no more than examined the visible mucous membranes when the dog collapsed and respirations ceased. I placed in his mouth a tablet containing $1/100$ grain of nitroglycerine and began artificial respiration. After about five minutes the patient resumed breathing, and at this time $1/130$ grain of strychnine was given, and after a few minutes another tablet of nitroglycerine.

After thirty minutes the animal appeared better, but unable to walk. A guarded prognosis was given, and owner prepared to meet the fatal termination, which occurred four hours later.

Post Mortem—The autopsy revealed the eleventh and twelfth ribs on the right side fractured, the former near the costal cartilage, the latter near the vertebral end (neck). The articular capsule between the first and second lumbar vertebrae was torn and the spinal cord was exposed. The mesentery attaching near the caecum was lacerated, the left kidney was torn loose at anterior, and left suspended by its posterior attachment; while the right ureter was divided about one and one-half ($1\frac{1}{2}$) inches posterior to the kidney. The spleen was divided in two portions, one showing marked clotting and weighing four grams more than the other portion.

CYSTOLITHIAS IN A FEMALE DOG.*

By ROBERT W. ELLIS, New York, N. Y.

In the latter part of September my attention was called to a female collie, aged about three years, that was passing blood with the urine and occasionally some pus. It was the owner's

* Presented to the Veterinary Medical Association of New York City, at its November meeting.

opinion that the trouble was the result of parturition; the bitch having given birth to a litter of rather oversized mongrel pups about six weeks previously. My diagnosis, notwithstanding, was stone in the bladder, which was confirmed by rectal examination. An unfavorable prognosis was given, and an operation suggested. This the owner was reluctant to consider, and requested some form of medical treatment. Sanmetto was prescribed, and given for four or five days with negative results, when the owner requested an operation. The dog was accordingly brought to the office, and on October 2, placed under general anaesthesia (two tablets H. M. C. Formula B hypodermically and a few whiffs of ether), the region immediately in front of the pelvis shaved and scrubbed, and an incision made at that point. The bladder was then lifted up and cystolysis performed. A cystolith weighing $2\frac{1}{2}$ drachms, with a burr-like surface was removed. The nature of the surface of the stone indicated that no others had occupied the bladder with it, which inference a rapid inspection confirmed. The incision in the bladder was closed with an uninterrupted catgut suture. The incision in the abdomen was closed with one set of interrupted sutures, and the body bandaged. A catheter was then passed and the bladder washed out with a warm chinosol solution 1 to 500. The daily washing out of the bladder with the chinosol solution, and an occasional rebanding of the body constituted the after-treatment. The case made an uneventful recovery.

REPORT OF AN ANTHRAX AND BLACK LEG OUTBREAK.

By HERBERT HOOPES, V.M.D., Bel Air, Md.

An outbreak of anthrax occurred in Harford County, Md., close to the Pennsylvania line, the latter part of September, and first part of October, in which nine cows and heifers and ten hogs were lost.

But three weeks after a second vaccination no new cases have occurred, and it is hoped none will, as nearly all of the adjoining farms took the precaution to vaccinate.

About ten days ago black leg appeared on a farm in the central part of the county, three young heifers dying.

Both of these diseases are very rare in this section, this being the first anthrax that I can find any history of in these parts or anywhere close.

A MALTESE TERRIER CRUSHED UNDER MILK WAGON—RECOVERY.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.
American Veterinary Review

Called early one morning to see a Maltese terrier which was run over by a milk wagon.

This dog was quite anemic and weak and evidenced pain by screaming when touched, so that the owner said, "If you think advisable destroy it and prevent its suffering." This was not done, but the little creature was given an hypodermic H. M. C. and taken to the office where it would be under close observation. While at the office the patient was constantly examined and stimulants were applied to the tongue (pro re nata) (occasionally) as circumstances indicated, and a large cat that was in the office acted as nurse in keeping the patient warm. The next day the dog was taken home, being much discolored along where the wheel passed over the body. About a week later the patient was returned to the office, and upon examination it was decided that there was a hernia present. The animal was kept on a liquid diet and the client given instructions as to replacing the intestine. An examination of the dog about two weeks later revealed no evidence of the hernia, and the patient having made a complete recovery.

No mention with other of any
case of such to be without

THE NEW YORK CITY ALUMNI ASSOCIATION OF THE IOWA STATE COLLEGE gave an informal dinner on November 20, at the Aldine Club, New York, in honor of Professor Ward M. Jones, General Secretary of the Iowa State College Alumni Association; the professor being in the city in attendance at a meeting of the Association of Alumni Secretaries, at Columbia University. All present enjoyed Prof. Jones' review of the work of the Iowa State College. Four schools were represented: Home Economics, Engineering, Military Science and Veterinary Medicine; and while a nice gathering was present, the regret of those that could not attend on account of previous engagements indicated that a much greater number would have been present had they had a longer notice (but one day's notice having been given). President Pearson was highly spoken of by those who had met him, and those who had not, expressed a great desire to do so. Crittenden Ross, D.V.M. ('14) represented the veterinary school.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

DIFFICULT PARTURITION IN A MARE [*P. W. Dalling, M.R.C.V.S.*].—Record of a bay Clydesdale mare, which had two foals on previous occasions, but this time had difficulty. By examination, the nose of the foetus was found in the passage and the fore legs being put in proper place, everything was secured with ropes and it was supposed the delivery would soon be over. But when the points of the haunches were just in front of the brims of the pelvis of the mare, all pulling was of no avail. The foetus was twisted over, and over again, but the same resistance prevented the extraction. An extra strength was then applied and part of the foetus finally came out. It had broken in two. The remainder was pushed back in the uterus, and by searching, the hind legs were secured and the balance of the foetus brought out. Examination of the foal revealed that it was abnormally enlarged in the development of the pelvis; all the diameters of the latter being exaggerated and hence the failure to enter the pelvis of the mare. Recovery of the mother was uneventful.—(*Veter. Record.*)

PROTRACTED CASE OF PURPURA [*W. R. Darlis, M.R.C.V.S.*].—A stable of sixty horses had been infected with "Infectious catarrh." One morning, a cob that had worked well the day before, was found with swellings of both hind legs. His temperature was 104 degrees F. Pulse and respirations accelerated. Throat was not sore, there was no cough, no nasal discharge. There were petechial spots on the nose. Purpura was diagnosed. *Treatment:* Four drachms of Lugol's iodine solution were injected intravenously and repeated every day for a week. Temperature came down to 102 and 103. Pulse and respiration nearly normal. Appetite very poor. About the tenth day some improvement was manifested, but on the fourteenth the cob was taken with violent colic, the swellings returned on the lips,

on the nostrils and in 24 hours the head was enormous. Three large patches had formed over the ribs and on the near flank. In four days, the swellings subsided some, and the temperature, which had gone up to 105, began to come down and return to normal. Large patches of skin on the face, the shoulders and the body sloughed out and left the cob a perfect wreck. The convalescence was very long. Lugol intravenously, every day, quinine, chlorate of potash, and tincture perchlo. ferri formed the base of this tedious treatment.—(*Veter. Record.*)

STREPTOCOCCUS AND STAPHYLOCOCCUS VACCINE IN CANINE PRACTICE [W. H. W.].—Bull dog, when seen had a portion of the skin over the carpal joint honeycombed with sinuses, discharging pus. Antiseptic treatment was used with no result. The affected skin was excised. All went well for several months when a further area of skin became affected and as excision was impossible on account of the large surface involved, streptococcus and staphylococcus vaccine (P. D. and Co.) was resorted to—50 millions, 75 millions were without results. A third dose of 100 millions was followed with septic disturbance. Repeated for five days, no ill results were produced. 200 millions were then given for two days more. After the third injection, the sinuses began to heal, no fresh new ones appeared. After the fifth, there was no more discharge, no sinuses seemed to exist anywhere and the skin looked almost normal. The last dose was given as precautionary. Recovery, if it lasts, shows at least as good results as an operative treatment would.—(*Ibidem.*)

CALCULI IN DOUBLE COLON [Charles C. Hoadley, M.R.C.V.S.].—A horse has worked for several years in perfect health and without having ever shown any abdominal pain of any nature. Lately he has had slightly painful colics, which had never assumed violent character. For nine days he had passed but very little feces and rectal examination did not reveal any signs of obstruction. He died and at the post-mortem examination two calculi were found in the double colon. These calculi were practically of equal size, weight and shape. They had facets on their faces showing that they had been in constant contact and when taken from the intestine they were separated only by 18 ounces. The two together weighed 14 lbs. 2 ounces, they both measured at the widest part about six inches.—(*Veter. Record.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

A NYMPHOMANIAC MARE AND OVARIAN TUMOR—SECTION OF THE PEDUNCLE—RECOVERY [*Prof. Cadeac*].—This is the publication of a case observed several years ago, of a mare bought very cheap on account of her ugly disposition. Perhaps castration would cure her. After preparation, she was secured in stocks and the first steps of the operation performed; viz., the perforation of the vaginal septum and introduction of the hand, which then discovered an ovoid enormous tumor, which it was impossible to bring out of the vagina. This method for removal of the growth had to be abandoned. After a fortnight, when the mare had recovered from this first attempt she was cast. The flank was opened and the abdominal cavity entered. But the growth was so enormous that it would have required such a large incision that ventral hernia, a true eventration, would have been possible. It was then decided to simply divide the peduncle. This was done with the ecraseur and the tumor left free, dropped among the intestinal circumvolutions. The abdomen was then closed with sutures. The animal made an excellent recovery and was sold for a very high price afterward.—(*Journ. de Zootech.*)

DOG BITTEN BY VIPER [*Dr. Bianchi*].—Running about through woods, a dog must have been bitten, and refusing to walk, had to be carried home in a wheel barrow. After a few hours, he had quite a large swelling on the right fore paw with ecchymotic colorations and swelling of the sub-maxillary region. He also had another in the axilla and one on the left shoulder. He was very restless, moaned constantly, had great thirst, vomited by intervals and had abundant salivation. Towards the afternoon of the same day, his condition grew worse; laying on his side, he had repeated jerkings of the body, hurried breathing, weak heart pulsations, eyes dull. 10 c.c. of Calmette serum were injected, followed by another injection one hour after. Then only slow improvement is noticed. The next day, an injection of camphorated oil was given and renewed 24 hours after. Improvement continues. The skin of the paw burst open and black sanguous blood oozed out. Soreness and lameness lasted for several days after. It took two weeks for the recovery to be complete.—(*Bullet. Sciences Veter. de Lyon.*)

THREADED NEEDLE IMPLANTED IN THE LARYNX AND PHARYNX [Mr. Brion, 4th year student].—Nine-year-old watch dog refuses his food, saliva flows in abundance from his mouth and he vomits everything he tries to swallow. There is a warm and painful swelling of the intermaxillary space. Nothing abnormal is detected in the mouth. Peripharyngeal abscess is suspected. A blister is applied over the diseased region. The condition does not improve. The abscess does not come to fluctuation. Towards the fifth day the swelling subsides, the saliva has a very putrid odor, the general condition becomes alarming and the following day the dog dies. *Post mortem*: Abdominal viscera are congested. Thoracic cavity contains a large quantity of sero-bloody effusion. Right heart is dilated. Round the pharynx there is an abscess containing greenish fetid pus. The tongue has necrotic spots at its base. At the entrance of the larynx, there is implanted in the aryteno-epiglottic fold of the mucous membrane a needle carrying 25 centimeters of thread and resting with its point on the postero-lateral wall of the pharynx. The position of this foreign body rendered all surgical interference useless as well as difficult.—(*Journ. de Zootech.*)

CHRONIC INGUINAL HERNIA IN A SLUT—RETENTION OF FÆTUS—HYSTERECTOMY—RECOVERY [Prof. Adjunct Charmoy].—Gordon setter bitch, eight years old, had a swelling in the right groin, existing since four years. It has grown and is now bigger than the fist of a man. It has all the characters of a chronic inguinal hernia. Since a few days the slut is dull, has fever, poor appetite and seems to have pains. There is hypersensitivity of the region, and a hard, elongated body is felt in its depth. The animal is anaesthetised with morphine and chloroform, the region is disinfected, the skin incised and the hernial sac isolated. On account of old adhesions it is difficult to reduce and it is necessary to open it freely to complete this step of the operation. The body of the uterus and part of the uterine horns form the contents of the hernia. One of the horns forms an ovoid tumor. The ablation of the uterus and horns is decided and performed. Their mass weighed 385 grammes. On examining them afterwards, remains of a foetus were found in the cavity of the horn. Ultimate recovery was uneventful.—(*Rec. de Med. Veter.*)

ARMY VETERINARY DEPARTMENT.

THE ATTITUDE OF THE WAR DEPARTMENT TO THE ARMY VETERINARY SERVICE BILL (H. R. 4541).

STATEMENT OF MAJOR GENERAL WOTHERSPOON, CHIEF OF THE GENERAL STAFF, UNITED STATES ARMY, BEFORE THE SUB-COMMITTEE OF THE MILITARY COMMITTEE OF THE SENATE.

Doubtless the weightiest point in favor of the Army Veterinary Service Bill (H. R. 4541) from the time it was introduced in the House of Representatives by Mr. Hay of Virginia May 1, 1913, up to the present moment has been that it is unequivocally supported by the War Department. We have known that from the start and it has been not only a comfort and delight to us but also it has given our energies displayed in work for the passage of the bill a voltage and a lilt that they have never had before. Still we have never in this campaign placed too much reliance in ostensible support from that source and have reserved an opinion that it might be possible or at least a fear, judging from bitter experiences of the past, that it might be possible that that support was not all sincere. Our fears were dispersed, as far as the attitude of the highest ranking officer of the army is concerned, when he appeared before the Sub-Committee of the Senate Committee on Military Affairs, when called upon for testimony by that body, and was interrogated as follows:

GARRISON STEELE, M.D., D.V.M.

ARMY VETERINARY SERVICE.*

THURSDAY, JUNE 4, 1914.

Sub-Committee of the
Committee on Military Affairs,
United States Senate,
Washington, D. C.

The Sub-Committee met at 2.30 o'clock p. m.

Present—Senators Lea (chairman), Hitchcock, and Catron.

* Hearing before the Sub-Committee of the Committee on Military Affairs, U. S. Senate, 63d Congress, 2d Session, on S. 4331.

STATEMENT OF MAJ. GEN. WILLIAM W. WOTHERSPOON, CHIEF OF THE GENERAL STAFF, UNITED STATES ARMY.

Senator Lea—Gen. Wotherspoon, we wish to have the benefit of your views upon the bill 4331, introduced by Senator Kern, to consolidate the veterinary service of the United States Army, and to increase its efficiency.

Gen. Wotherspoon—The bill is an excellent one.

Senator Lea—Give us your views upon it.

Gen. Wotherspoon—It provides for a corps of veterinarians, and makes their position in the service permanent, which they are not now, and provides for promotion after a service of five years to the grade of first lieutenant, and after 15 years, to the grade of captain. It provides also that after a period of faithful and efficient service they shall be placed on the retired list. It really makes them commissioned officers, by and with the consent of the Senate.

Senator Catron—You think that is advisable, do you?

Gen. Wotherspoon—I do. There is a certain element in the bill which might work to the disadvantage of the line officer, in that it provides, as the existing law does for the Medical Corps, that after a period of service, they shall have a higher grade, while the line officer has to wait for a vacancy. For instance, I was for 20 years a lieutenant, and if I had been a veterinarian, and this law in force, I would have been a captain, under the provisions of this bill, in 15 years.

Senator Lea—I understand that veterinarians have such status in most of the European armies.

Gen. Wotherspoon—Yes; they have a very high status over there.

Senator Catron—Senator Lea asked you if they have such status as this bill provides for. That is what I understood you to mean, Senator.

Senator Lea—Yes; if they have a status equivalent to that of commissioned officers in European armies.

Gen. Wotherspoon—Yes; in nearly all European armies, and they are looked up to as a scientific corps.

Senator Lea—Senator Catron and myself were inclined to criticize this bill in that there was no specific provision for the duties of these veterinarians when they were made officers. What have you to say about that?

Gen. Wotherspoon—I think that is sufficiently provided for when you say here they shall be with the regiments of Artillery and Cavalry, and inspectors of horses and mules, and inspectors of meat.

Senator Catron—Another thing that I think Senator Lea and I agreed on is that this bill does not define their authority as well as their duties—what authority they could exercise in these matters in a command.

Gen. Wotherspoon—They are placed very much in the same position as the Dental Corps, whose duties are defined, but whose status in relation to others is not defined except by general regulation. They would have all the respect paid to them and have all the emoluments of their rank, and exercise authority over those under their own jurisdiction; that is to say, the stable sergeants and the stable orderlies, and the attendants in veterinary hospitals would be under them. That is a mere matter of regulation.

Senator Lea—We regard this measure as quite a radical step, and we did not want to take any action upon it without having the views of the Chief of Staff.

Senator Catron—Do you think that if the veterinarian in examining or looking over the horses of a regiment should find some of them needed treatment, he would not have the right, independent of the colonel or of the commanding officer of the corps, to send those horses off to the hospital, or whatever you might call it?

Gen. Wotherspoon—No, sir; he would have power only to recommend, and then the colonel would have the final action on it. He could recommend

their transfer or isolation, which would be the principal thing in the case of glanders.

Senator Catron—Do you not think he ought to have more power than merely to make a recommendation?

Gen. Wotherspoon—No, sir.

Senator Catron—He would be conflicting with the commanding officer's power. In the case of glanders he ought to have the power to take those horses out of there. Sometimes you get a commanding officer who is not altogether human, either.

Gen. Wotherspoon—The comptroller charges up the value of the animals destroyed contrary to law, and he would be responsible for their death unless they were treated and killed according to the law and regulations.

Senator Catron—My idea was that we ought to leave it until it got to the auditor, but that he ought to have the power to do that in any event, if anybody stood in the way of his doing it. My idea about it is that the corps is an absolutely necessary thing, and that these men should be given all the power that they need to enable them to exercise their professional calling in the place where they are put.

Gen. Wotherspoon—I do not think that the duties of medical officers serving with the troops are defined any more clearly than this, they attend the sick, and they can not do this and can not do that without the consent and approval of the commanding officer, which always is given, of course. Never, in all my service, have I seen any question about it.

Senator Catron—Do you believe this bill would work?

Gen. Wotherspoon—Yes, sir; I believe the bill would work.

Senator Catron—So far as those features are concerned?

Gen. Wotherspoon—Yes.

Senator Catron—And without creating any friction anywhere?

Gen. Wotherspoon—Without creating any friction.

Senator Lea—How much would this bill, if enacted into law, increase the cost of the Veterinary Corps?

Gen. Wotherspoon—I have here a statement that in 1913 the cost was about \$141,000.

Senator Catron—You mean the total cost of it; and that will be increased?

Gen. Wotherspoon—That is June 10, 1913. The total cost of the organization, not considering temporary or emergency employment, is \$141,000. The cost under House bill 4541, which is practically the same as the bill here, is about \$172,000.

Senator Hitchcock—What does the increase consist of?

Gen. Wotherspoon—The cost of the present organization, as stated June 10, 1913, not considering temporary emergency employment, was for 5 animal inspectors and 5 meat inspectors, at \$1,800 per annum, \$18,000; 42 veterinarians, at \$1,700 each, \$81,400; and for light, heat, quarters, and forage, \$26,000; 13 veterinarians, at \$1,200 each, \$15,600; total, \$141,000.

Senator Catron—How many are there of the veterinarians; what is the total of those you have enumerated just now?

Gen. Wotherspoon—There would be 65. There would be some temporary ones. The total number would be 62.

Senator Lea—As I understand, they are contract employees?

Gen. Wotherspoon—Yes.

Senator Hitchcock—The total number would be 62?

Gen. Wotherspoon—Yes.

Senator Hitchcock—And in addition to that, what does it provide? I want to see, because we are increasing from \$141,000 a year to \$172,000 a year.

Gen. Wotherspoon—The bill states the number of veterinarians. The cost of the total number is \$141,000. The cost of the veterinary corps under this bill varies from a minimum number of 62 with 5 years' service to a maximum of 62 veterinarians with 20 years' service; that would be with what we call the fogey pay for length of service.

Senator Catron—There never would be that many, as a matter of fact?

Gen. Wotherspoon—There never would be that many with 20 years' service. That would make it from \$141,000 to \$208,322, or an average of \$166,860 per annum, and the difference is undoubtedly in the additional pay that comes from length of service as commissioned officers.

Senator Catron—There is a difference in the fact that the commissioned officer gets more to start with?

Gen. Wotherspoon—Yes; he gets more to start with.

Senator Hitchcock—Is there now any difficulty in getting good veterinarians under the present conditions?

Gen. Wotherspoon—*Some of those we get are not good. Men will not stay when they have marked ability. The pay is too small for them.*

Senator Catron—*If they were made officers, such as this bill contemplates, do you think you would get first-class men?*

Gen. Wotherspoon—I think so; yes, sir.

Senator Hitchcock—Is there serious objection to taking men out of civil life and civil employment, and making them part of the official rank in the Army?

Gen. Wotherspoon—Well, we have always had contract doctors—acting assistant surgeons.

Senator Catron—Medical men, doctors, were taken out of civil life to start with.

Gen. Wotherspoon—Yes; but we always have had a class in the Army, up to recent years, known as contract doctors, who were not commissioned. They got a pay of \$125 a month.

Senator Catron—They would correspond in one respect to these contract surgeons as they are here?

Gen. Wotherspoon—Yes; as they are now.

Senator Catron—Senator Hitchcock's suggestion was taking these men and making officers of them. I do not know whether I understand you correctly, Senator?

Senator Hitchcock—There is a constant clamor at every session to add some one of the other class of professional men or tradesmen to the Army and to give them official rank.

Senator Catron—Yes.

Senator Hitchcock—The dentists want it; physicians want it; veterinarians want it. I do not know but what the opticians want it. They all want to get in on Uncle Sam's pay roll, with the prospect of promotion and ultimate retirement, and it seems a bad mixture of the civil with the military. I have been opposed to it. It always means extra expense. I wanted to ask Gen. Wotherspoon whether there was any added efficiency which would be created by this bill?

Senator Lea—Your question was whether we would get additional value for the added expense?

Gen. Wotherspoon—The only value that I can see in it is that you *would get very much better men, and that is a very strong consideration.* With the strong inducements of additional pay and the right to retirement, you would get better men. It is a big bill to pay, I admit, for additional efficiency.

Senator Lea—Testimony was given the other day that the experience in the English Army had been that there was a tremendous saving in the purchase and care of horses and live stock as the result of a reorganization of the veterinary service and making the veterinarians commissioned officers. Do you believe that to be true?

Gen. Wotherspoon—I would take that with a great deal of salt, because I think that is in the nature of special pleading. No one could say how many animals would be saved by this, or how much efficiency of business would be gained.

Senator Lea—I think it was Dr. Hoskins, who is interested in the passage of this legislation, who told us that the losses of the English Army during

the Boer War had been tremendous on account of inferior horses and lack of knowledge of how to care for them, and they had some statistics showing an enormous saving in the English Army in the purchase of horses and otherwise that resulted from the making of these veterinarians officers. What I want to know is whether you know anything of those statistics, whether they are in existence, and whether you believe them.

Gen. Wotherspoon—I should doubt them very much; that is, to the extent that they claim. Undoubtedly you have better judgment at a higher price and a more efficient man; but to grade it down and say how many horses were lost or saved from the fact that it was an indifferent or a highly trained veterinarian that inspected them, I doubt whether anyone could reach any such conclusion.

Senator Catron—Here is what Dr. Hoskins said:

"The Boer War cost England \$76,000,000 in useless, unnecessary loss—I will not say useless, but unnecessary loss—of horses because of the lack of authority of the veterinarians. They have given them authority since the Boer War."

Senator Hitchcock—How many horses have we in the Cavalry?

Gen. Wotherspoon—About 14,000.

Senator Hitchcock—Can you tell about how many there are in the Artillery?

Gen. Wotherspoon—About 4,400.

Senator Hitchcock—Are those all the horses that these veterinarians have the care of, or are there a number of horses used by the Quartermaster's Department?

Gen. Wotherspoon—There are quite a number of them in the Quartermaster Service. Without having a table I could not tell you.

Senator Hitchcock—Are there 2,000?

Gen. Wotherspoon—I should say nearer 3,000.

Note—There are 4,093 horses in the Quartermaster, Medical, Engineer, and Signal Corps.

Senator Catron—Are those animals all horses or are some of them mules?

Gen. Wotherspoon—These are horses for the men of the machine guns, detachments of the regiments, draft purposes, etc.

Senator Hitchcock—They all have to have veterinarians, of course?

Gen. Wotherspoon—Yes.

Senator Lea—In round numbers, all together, 25,000?

Gen. Wotherspoon—I should say 25,000, because the Signal Corps and the Engineers would come in there.

Note—The total number of horses in the Army is 22,522.

Senator Catron—In addition to them, how many mules or other draft animals would you have?

Gen. Wotherspoon—About 13,000.

Senator Hitchcock—There are 25,000 mules?

Gen. Wotherspoon—No. These figures are not in my mind; they are all in the Quartermaster's tables that I have to refer to; but I should think there are 13,000 mules.

Senator Hitchcock—Thirteen thousand mules?

Gen. Wotherspoon—Yes.

Senator Hitchcock—You are strong on mules, in addition to this many horses.

Gen. Wotherspoon—Each troop of Cavalry has mules to haul its wagons. I should like you to take those figures with a great deal of salt.

Senator Lea—Could you get those figures and send them to us to be embodied in the hearing?

Gen. Wotherspoon—Yes.

Senator Lea—You could give us the total number of animals?

Gen. Wotherspoon—Yes.

(The statement referred to is as follows:)

| | |
|---|---------------|
| Horses with Cavalry regiments (public)..... | 13,400 |
| Owned by Cavalry officers..... | 645 |
| Total..... | 14,045 |
| Horses with six regiments Artillery..... | 4,114 |
| Owned by Artillery officers..... | 159 |
| With Artillery detachment at West Point..... | 111 |
| Total..... | 4,384 |
| Riding horses with Infantry, Signal Corps, Ambulance Companies, Field Hospitals, and Engineers..... | 1,691 |
| Owned by Infantry, Signal Corps, Engineer, Hospital Corps, and field hospital officers..... | 731 |
| Total..... | 2,422 |
| Draft horses at Coast Artillery posts, independent stations, etc..... | 1,671 |
| Total horses in the Army..... | 22,522 |
| Mules in the Army: | |
| Draft mules | 7,597 |
| Riding mules | 645 |
| Pack mules | 2,655 |
| Total..... | 10,897 |

This department purchases annually 10 per cent. of allowance of horses for United States and 20 per cent. of allowance of horses for Philippine Islands to replace unserviceable animals.

During the past five fiscal years the following animals have been purchased:

| Fiscal Year. | Horses. | | | | | Mules. | | |
|--------------|----------|------------|---------|--------|--------|--------|-------|---------|
| | Cavalry. | Artillery. | Riding. | Young. | Draft. | Draft. | Pack. | Riding. |
| 1910..... | 1,241 | 394 | 408 | 962 | 127 | 754 | 339 | 85 |
| 1911..... | 983 | 124 | 161 | 1,681 | 13 | 787 | 344 | 42 |
| 1912..... | 481 | 73 | ... | 1,790 | 5 | 507 | 260 | 28 |
| 1913..... | 1,070 | 31 | ... | 1,331 | 27 | 908 | 230 | 87 |
| 1914..... | 2,300 | 990 | 258 | 631 | 17 | 1,181 | 294 | ... |

Senator Hitchcock—That would indicate that we have about half as many horses and mules as we have men.

Gen. Wotherspoon—In the War of 1861 to 1865 statistics show that we had an animal to every $1\frac{3}{4}$ men and a wagon to every 27 men. These are enormous figures. We had nearly a million men, of course.

Senator Hitchcock—What has Germany done in the matter of attaching professional men to the Army? Have they been given rank?

Gen. Wotherspoon—I think they have been given rank; yes. The members of the first three classes named are officers without military rank, the highest with the rank of councilor, civil grade, of the fourth class. They are termed military officials. They are field officers. They have field and company rank.

Senator Hitchcock—Do they have rank equal to the rank provided in this bill, that of second lieutenant?

Gen. Wotherspoon—They have rank as field officers, as major, and as company officers, captains, first lieutenants. That is higher rank than we have.

Senator Hitchcock—What is the highest rank provided for in this bill?

Gen. Wotherspoon—Captain.

Senator Hitchcock—That means that all of these veterinarians who get an official rank are entitled to be retired when they reach the age of 62 years?

Gen. Wotherspoon—Sixty-four, or when they become disabled in active service by reason of wounds or disease contracted in the line of duty.

Senator Hitchcock—And that means that there will be a number of them on the retired list?

Gen. Wotherspoon—Yes; it will tend to increase the retired list.

Senator Hitchcock—In other words, they will be acting as veterinarians in their own communities and drawing retired pay from Uncle Sam?

Gen. Wotherspoon—That is very apt to be so.

Senator Hitchcock—That is about what it means.

Gen. Wotherspoon—They would not be exposed to the fatigues and strains of field service after that time. It is like a retired doctor who gets a private practice.

Senator Hitchcock—Under the terms of this bill, at what age could a man enter the service?

Gen. Wotherspoon—Between 21 and 27.

Senator Hitchcock—Is that the greatest age at which he could enter?

Gen. Wotherspoon—That is the greatest age. It provides as follows:

"That hereafter a candidate for appointment as assistant veterinarian must be a citizen of the United States, between the ages of 21 and 27 years."

Senator Catron—That is for the first organization of the corps?

Gen. Wotherspoon—Yes.

Senator Hitchcock—At the present time have you any idea what the maximum ages are of veterinarians attached to the Army?

Gen. Wotherspoon—No, sir; I do not know that.

Senator Hitchcock—There may be some already approaching the age of retirement?

Gen. Wotherspoon—There may be some. Gen. Aleshire can give the committee all that information.

Senator Catron—What proportion of the officers of the Army reach the retiring age, or retire?

Gen. Wotherspoon—I could not give you those figures, but quite a small percentage of the total number of officers are retired.

Senator Catron—That is what I meant.

Gen. Wotherspoon—It is a small number who reach the age of 64.

Senator Catron—Or are retired on account of other causes?

Gen. Wotherspoon—Yes. Unfortunately as the result of the Spanish War there have been a great many retirements of comparatively young men, due probably to relaxation of the physical examinations when they entered, for one thing, and to great exposure in the Philippines and in Cuba, for another.

Senator Hitchcock—Is the proportion of men who reach the age of retirement in the Army greater than would be indicated by the actuary tables of insurance companies?

Gen. Wotherspoon—I think it is less than the actuary tables.

Senator Hitchcock—Less?

Gen. Wotherspoon—Yes; because we have the additional risks. As a matter of fact, very few insurance companies will take officers of the Army. They are not good risks, on account of climatic exposure. I cannot get any insurance if I go to the Philippines or to Panama, except by paying extraordinary premiums.

They seem to pay very little attention to the danger from wounds.

Senator Catron—Take this veterinary corps that it is proposed to organize, and supposing that the bill had been in operation 20 years, about how many men do you think might be on the retired list? Can you form any judgment about how many there would be out of the 62?

Gen. Wotherspoon—I should say about six or seven, at a rough guess.

Senator Hitchcock—*Does the War Department now recommend the passage of this bill?*

Gen. Wotherspoon—*The War Department does, yes; and I do, too. I think it is a good bill.*

Senator Hitchcock—Is not that a new thing for the War Department to do?

Gen. Wotherspoon—The original date of their recommendation was 1912. It started in March, 1912.

Senator Lea—I understand that the department estimates that the cost of the average is \$41,000 more a year for the organization of the corps under this bill, but the department thinks that it will increase the efficiency of the veterinary service more than enough to offset that amount.

Gen. Wotherspoon—That is the allegation of the War Department, and it is justified to a certain degree by the results that you will get from the examination of horses when they originally come into the service, and the care put on them after you get them in.

Senator Catron—You mean that by the additional efficiency there will be that much saved actually by this organization of the service; because of the examination of horses when they enter and the care taken of them so that there will not have to be so many thrown away?

Gen. Wotherspoon—Yes.

Senator Catron—You want to get good men in the veterinary service; and, second, you want to hold them in the service after they develop into good men; is that true?

Gen. Wotherspoon—Yes. *We have had this case which has come under my own observation since I have been Chief of Staff. Two of the most efficient veterinarians that we have had, men who have proved themselves, have applied to go to the veterinary schools; one in Philadelphia and one in Ithaca, I believe. At any rate, they are veterinary schools of a very high class. There is no doubt in my mind that when those men are graduated there and get their diplomas, we are liable to lose them.*

Senator Hitchcock—They will set up in business for themselves?

Gen. Wotherspoon—Yes.

Senator Catron—Do you think if the allowance was made for giving them rank we would get such men as that?

Gen. Wotherspoon—Yes; if you give them rank as officers.

Senator Catron—Yes; but I understand you have all grades, running from No. 1 down through the number of men you have in the class and they may be lower in some respects than others. Do you think you would get the best class of those who actually graduate?

Gen. Wotherspoon—I think we would.

Senator Catron—*The pick of them; that is what I mean to say.*

Gen. Wotherspoon—Yes; we would get the pick of those men, just as we get the pick of the dentists.

Gen. Wotherspoon—These veterinarians do a great deal of meat inspection for the Army, and probably it would be interesting to the committee to know how much meat they inspect.

Senator Hitchcock—That is something we do not know anything about.

Gen. Wotherspoon—One class of these veterinarians go to the butchers and inspect the meat that is used by the Army. That used to be done under the old system by the Quartermaster's Department, but these men now inspect the meat to see that it is not injurious to health. They take the place

of the Agricultural Department in the meat inspection for the Army. All meat that is served to the Army is inspected by this veterinary corps.

Senator Hitchcock—Does not the Army purchase meat that has already passed under Government inspection?

Gen. Wotherspoon—Yes; but where there is not a regular inspector they inspect it, and in some cases they inspect it even where there are inspectors.

Senator Hitchcock—They make a microscopic inspection?

Gen. Wotherspoon—I do not know. They can tell a tuberculous cow some way or other. *I never saw such astonishing things as they can do. They can pick up a piece of meat and tell you whether it is from a cow or a bull or a steer, and whether it is three years old or four years old or five years old, etc.*

THE "PURPLE CROSS," AN AID SOCIETY FOR HORSES IN WAR.

The "Purple Cross Society," founded in England towards the end of the Boer War, to relieve the suffering or wounded horses on the battlefield by mercifully destroying them, has recently been heard of again.

This society endeavored several times to have its charter ratified by the Geneva Convention, but without avail. Its last attempt at recognition was made in 1912 at the London Peace Congress, when the Society presented a petition: "To extend the protective provisions of the Geneva Convention regarding surgeons, nurses, chaplains, etc., also to those non-combatants who may visit the battlefield to relieve or put to an end the suffering of wounded horses and other animals employed in warfare; and that the British Government be requested to invite the other powers to widen the terms of the Geneva Convention so as to protect the veterinary surgeon, the horse ambulance and such voluntary aid societies as may be recognized by the governments."

This petition was indorsed by the foremost societies for the prevention of cruelty to animals in a number of European countries. It was also presented to the President of the United States. High-minded and humanitarian as is the aim of the Purple Cross Society, it did not find favor with the War Departments of the European Powers. Not that its lofty spirit was misunderstood, but military experts objected on practical grounds, arguing that the personell and the horse ambulances of the "Purple Cross" would seriously interfere with the rights and practices of the "Red Cross," and that the activity of an additional aid society in the field would endanger the freedom of military tactics.

Naturally, the veterinary officers of the European armies

favored the provisions of the Purple Cross, as it would secure for them a protection similar to that bestowed by the Red Cross, particularly an exemption from capture by the enemy, which they do not now enjoy. But they bowed to the decision of the military authorities.

When suddenly the European War broke out, the Purple Cross Society promptly offered its services. These were declined as superfluous. It was pointed out to the Society that all the armies engaged in the present war had regular Veterinary Corps, the members of which were duly commissioned officers invested with authority, assisted by trained farriers in sufficient numbers to attend to the wounded horses; that these corps had ample provisions for veterinary field service, including ambulances and field veterinary hospitals; and that therefore these corps were fully able to perform the humanitarian services aimed at by the Purple Cross.

We doubt that this statement is correct in all of its parts. We have been with wounded horses in war. Aside from the veterinary field hospitals which are necessarily located in the rear of the contesting armies, the veterinarians accompany the mounted troops into action in order to be on hand for such emergency treatment of horses as can be applied at once. During a victorious advance the veterinarians may be able to attend quite soon to the wounded horses left straggling on the battlefield; but during a retreat they must follow the troops to which they belong, and they are directed to abandon the wounded animals. These are left to the mercy of the enemy, who may or may not have the time to attend to them in the cruel pursuit of destroying the opposing forces.

Whatever parts of the statement of the military experts may be true as regards the European army veterinary services, none of them holds good for our own army. We have no veterinary corps, no commissioned veterinary officers with professional authority, no veterinary field equipment such as is furnished abroad. Consequently our Government could give no assurance of a merciful treatment of our army horses in war, such as the Purple Cross or other humanitarian societies desire to see instituted.

Yet, war may come upon us. Those of us who are "on watch on the Rio Grande," hope with the rest of the American people that the horrors and sins of war may be spared us. Often enough, however, it has seemed that only a spark were needed to kindle the flames. Should this happen, our army veterinarians would

be no better provided for actual field service than they were in the Cuban and Philippine campaigns. We all know what their veterinary record has been. Not a particle of humanitarian spirit would be shown to our horses, well or wounded, in the next war. The usual attention given to them is based entirely on economic grounds, *i. e.*, the ruthless practice of saving those that are still serviceable and abandon those that are unfit.

In spite of continuous and courageous efforts from within our profession, which is a humane profession, we have not progressed one iota during the last fifteen years towards a higher spirit in the army veterinary service, held down, as we were, by the objection of stubborn, uninterested and uninformed outsiders. It would be a proud day for us, could success crown our efforts during this time of peace in our land, instead of waiting for the next lesson of the next war to help us to attain the necessary reform of our veterinary service, which sorely needs a lift to a higher plane.

OLAF SCHWARZKOPF.

LARGE ENROLLMENT IN VETERINARY COLLEGE.—The enrollment of 49 students, against 32 last year, speaks volumes for the quality of work and reputation already reached by the four years' course recently established in veterinary science. In order to take care of this increase in students, many changes have been necessary. The old clinic room in the L of the building has been changed into an anatomical laboratory, where all the dissecting work will be done. The entire second story has been made into one large laboratory, with all new desks, and is fitted up for work in pharmacy and microscopic anatomy. All the clinic work will be taken care of in the fine new building soon to be completed and an account of which will appear in the RECORD at an early date.

With the new equipment and building, this college (Mich. Agr. Coll.—Div. Veterinary Science) will hold a position among the first three veterinary colleges in the United States. It is the only one east of the Mississippi that gives a four-year course and, with one exception, the only one that demands high school graduates as matriculants.—(*Clipping from an East Lansing Daily.*)

A NEW AMERICAN HORSE.—We learn from a foreign publication that the United States Government, in its scientific horse breeding pursuits, "will produce a new heavy horse, which they have already prenatally christened the Amgrey."—(*Rider and Driver.*)

CORRESPONDENCE.

PREVALENCE OF RABIES.

GLENS FALLS, N. Y., November 16, 1914.

To Editor AMERICAN VETERINARY REVIEW, New York:

We have had quite an epidemic of rabies in this and adjoining towns.

Several persons have been bitten and have taken Pasteur treatment. I was scratched by a rabid dog early in April of this year and took treatment. Since then I have had some fifteen or twenty cases of rabies in dogs and three or four cases in cattle.

To-day I was called to see a hunting dog suffering from furious rabies and shot him before he did any damage.

I have sent many heads to Cornell for diagnosis and all have been positive.

The authorities here do not enforce the quarantine and the citizens consider the muzzling of dogs a fake and the quarantine instituted for the grafters' benefit.

The way things are going rabies will exist for an indefinite time and some fine day after some person has died of this dread disease, perhaps the people will wake up.

Many medical men and a great majority of the laity do not believe in any such thing as rabies and many is the warm argument I have had with them on this subject.

I wish some reader of the REVIEW or the Editor might come to my rescue via an article in the AMERICAN VETERINARY REVIEW. I would give it to our local papers for reprint.

I am not looking for notoriety or graft, but I think it my duty to do all I can to protect the public even if they do not appreciate it.

Yours truly,

H. C. MURRAY.

A FRIEND IN NEED.

CHICAGO, ILL., Nov. 7, 1914.

We were in Paris. We were strangers and those who look after tourists "took us in" but not strictly in biblical sense.

In fact we were "taken in" so frequently that we began to get shy. We had taken one of the swift river boats up or down the Seine, I don't know which, to Alfort. It was vacation at this famous veterinary school. No arrangements had been made to receive us, so we did not get a very favorable impression of this excellent old school, although some students who spoke English were very kind and showed us the grounds of the outside of the buildings. Then we went to the Pasteur Institute and saw the magnificent tomb of the great savant and were walked through some of the laboratories by the janitor who exhibited a trained ape that could pass a tin cup to visitors in a very suggestive way. Still we were disappointed from a professional point of view.

While Dr. Ackerman and I were visiting Dr. Liautard, we mentioned this and the good doctor proceeded to give us a letter of introduction to his friend Dr. Evens, a prominent veterinarian of Paris. Just as soon as we got back to the city we proceeded to the doctor's office—that is, we intended to. It was located in the street Monsieur le Prince and as we labored under the delusion that Monsieur le Prince was a man, we were not looking for, it was not until we resigned ourselves to the gesticulations and imprecations of a taxicab driver that we reached the right place at last.

I shall not attempt to describe the cordial hearty greeting Dr. Evens gave us. While his knowledge of English was much greater than our knowledge of French, it was hardly equal to the occasion, but his elegant Spanish helped us out. We had a delightful visit and indicated to the doctor our desire to see the municipal abattoir and the Pasteur farm where the biological preparations are made. Dr. Evens enquired the number in our party and asked that we leave the rest to him.

Dr. De Vine has told you what a splendid trip Dr. Evens gave us to these interesting places and he would not consider for a moment our desire to pay for the automobiles. The doctor also invited us to dine with him the following evening at the restaurant Laperouse.

To those who do not know Paris it should be explained that the restaurant Laperouse was established upon the bank of the Seine some 250 years ago. While it is not the most magnificent it is probably the most famous restaurant of Paris. The doctor assured us that the most noted diplomats and scientists of the world had dined there, for the fame of its cuisine and wines is known in all parts of the world.

I can't tell you all about that dinner. I don't remember whether imported Canadian lobsters came first or whether it was some rare old wine. I recall how the portly master of the wine cellar looked in his long black gown, such as the chiefs of this wine cellar had always worn, with jingling keys at his waist as he opened the bottles of rare wines for the doctor's inspection; for the doctor is a connoisseur in good things to eat and drink. I can see the doctor now as he lifted the glass of rare wine to the light or tested for the bouquet or flavor.

After all the good things to eat and drink there were fine Havana cigars and toasts and speeches. I remember the speeches, particularly the eloquent one of Dr. De Vine and the lobster joke of Dr. Blattenberg, because I couldn't translate either the eloquence or the joke into Spanish. And so the pleasant hours passed. The writer has eaten a few mighty good dinners in his life but the dinner given by Dr. Evens to us as representatives of the North American veterinarians was the climax. We voted Dr. Evens the prince of good fellows, for a more genial host never lifted his glass to a friend.

Little did we think as we said "*Adios, hasta luego*" (good-bye until we meet again) that it might be for long, because we expected to meet him at the convention in London and we planned on our way back to the hotel to give Dr. Evens the best dinner London afforded if we had to pawn our watches and come home steerage to raise the funds to do it with, but the war upset all plans, for our good friend Dr. Evens was not there.

We can only hope that sometime we may have an opportunity to repay in a feeble way his generous hospitality, not to us as individuals, but as representing the profession in America.

N. S. MAYO.

VETERINARIANS TO ESTABLISH HOG CHOLERA SERUM PLANT ON A LARGE SCALE.—A western newspaper announces that a new hog cholera serum company is to be incorporated under the name of the Hamilton Chemical Company with a capital stock of \$60,000 in the city of Nobleville, Indiana. The company to be owned and operated by veterinarians. It states that the plans of the buildings have been completed and 20 acres of land bought. Dr. J. W. Klotz is said to be managing the work. We will probably hear the facts from the doctor later.

BIBLIOGRAPHY.

PRODUCTIVE SWINE HUSBANDRY.

PRODUCTIVE SWINE HUSBANDRY. By George E. Day, B.S.A., Professor of Animal Husbandry, and Farm Superintendent, Ontario Agricultural College, Guelph, Ontario, Canada. More than 300 pages, with 75 illustrations in text. Philadelphia and London: J. B. Lippincott Company.

This work, the product of a man at once scientific and practical, nicely balances both phases of the subject throughout the book. Divided into seven parts it takes up the following seven divisions of the subject: After Part I which is *Introductory*, we find *Principles of Swine Breeding*, *Breeds of Swine*, *Results of Experiments in Swine Feeding*, *Feeding and Management*, *Marketing and Curing*, and finally, *Buildings, Sanitation and Disease*. These seven headings require 35 chapters in which to describe the details of this interesting, nay fascinating, subject, and at the end of each chapter are a number of questions for self-quizzing on the matter just passed over, making the book admirably adapted to the student, while also convenient to the hog raiser, in whose mind the very question may arise that he finds, at the end of some one of the chapters, and he knows that in the chapter immediately preceding, he will find the answer. In Part II the types of swine are carefully considered and generously illustrated; then that fascinating subject (no matter what animal you have under consideration) of breeding and selection, is taken up in Part III. Here, the author says, theory and practice must go hand in hand, and knowledge must be combined with reason; but the really great breeder seems to possess a sort of intuitive genius given to the very few, and hence great breeders are not common. The author fully appreciates the advantages of inbreeding, in careful, intelligent hands, but just as fully appreciates the dangers of it in unskilled hands, and therefore thinks it safer to avoid it. Of course we all realize that nothing would ever have been accomplished in the improvement of the breeds of any animals but for the skillful practice of inbreeding, just as the author does; but like many valuable drugs of a highly potent character, valuable in the hands of the careful clinician and physician, but dangerous in hands of a layman. The clinician may be likened to the carefully trained,

observant breeder, and the layman to a careless, untrained breeder. A great part of the centre of the book is devoted to a study of the breeds of swine, very important and very instructive. The results of investigations and feed experiments is then given, followed by chapters on the various grains, meals and by-products. Pasture and soiling crops then come in for careful consideration, followed by chapters of the preparation of the feed, the management of the boar, and of the sow, and of the young pigs are all extremely interesting chapters. Fattening, marketing and curing follow, and finally, buildings, sanitation and disease complete this excellent work. In short, *Day's Productive Swine Husbandry*, based on scientific principles and worked out in the practical field, is indispensable alike to the student and practitioner of swine culture and reflects the broad knowledge of the subject in both fields, possessed by Prof. Day. Bound in cloth of sepia color and red, with a beautiful colored frontispiece, excellent paper and good type, it is a credit to the publishers and a nice addition to one's library.

THE REPORTS OF THE VETERINARY BACTERIOLOGIST, LL. E. W. BEVAN, AND OF THE CHIEF VETERINARY SURGEON, J. M. SINCLAIR, SOUTHERN RHODESIA, 1913, reached the REVIEW office recently, and are of great interest. The first includes *Examinations of Preparations*; *African Coast Fever*; *Plasmoses of Cattle*; *Horse Sickness*; *Trypanosomiasis*; *Accommodation*. The second includes *African Coast Fever*; *Bovine Plasmosis*; *Anthrax and Lungsickness (Contagious Pleuropneumonia of Bovines)*; *Black Quarter or Quarter Evil*; *Tuberculosis*; *Trypanosomiasis*; *Rabies*; *Glanders*; *Rinderpest*; *Importation of Stock*. Both of these reports are extremely interesting and instructive and we shall publish parts of them from time to time. The report on glanders is interesting from its brevity, and is as follows: "The Territory remains free from this scourge. During the year the following animals were tested with mallein on importation: Horses, 1,000; mules, 741; donkeys, 2,495. Three horses reacted. Post-mortem examination in each case showed lesions of glanders."

COULD NOT CHANCE REVIEW SUBSCRIPTION EXPIRING.— Michigan veterinarian sent check covering two years in advance with above explanation.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

OCTOBER MEETING.

The regular monthly meeting of this association, following the summer recess, was held in the main lecture room of the New York-American Veterinary College, October 7, 1914, at 8.30 o'clock.

Before the regular meeting was called to order Dr. R. W. Ellis invited the members and visitors to examine a driving mare of which he gave the following history.

Road mare, developed acute nymphomania in the early part of 1913, horsing continually for three months, switching and kicking when driven. Brought to the college and operated on at Dr. H. D. Gill's surgical clinic, both ovaries being removed. Made a complete recovery and in about three months had gained 60 or 70 pounds and showed no return of the previous symptoms until May, 1914, when she started horsing, with return of all the other conditions.

Dr. Ellis exhibited the ovaries which Dr. Gill had removed in April, 1913, and asked what any of the members could suggest to correct this condition.

Dr. Goubeaud suggested section of the pudic nerve, giving it as his opinion that this operation would be successful.

Dr. DuBois suggested docking and setting up the tail, saying that he had good results in similar cases from this operation.

Dr. J. F. DeVine also stated that he had repeatedly set up tails in horses and mares with good results in stopping switching and kicking. He advocated docking and setting up the tail in this case.

Others suggested the removal of the clitoris.

The regular meeting was then called to order in the lecture room.

The minutes of the June meeting were read and approved.

Dr. Thos. B. Rogers then read a very interesting and scientific paper entitled "The Action of Certain Plants in Sensitizing Non-Pigmented Skin to the Action of the Ultra Violet Rays."

This article indicated that the doctor had given this subject much thought and study as well as a great amount of research work.

Dr. Rogers also demonstrated ovariotomy in a cat.

Drs. Smith and Cochran, delegates to the New York State Veterinary Medical Society, then gave a brief account of the meeting held at Rochester in August of this year, and stated that the next meeting would be held in Ithaca.

Dr. E. B. Ackerman, delegate to the International Veterinary Congress at London, gave a brief account of his European trip and the trials and discomforts the party underwent owing to war conditions.

Mentioned having called on Dr. Liautard with Dr. Mayo, spending the day at the Doctor's country estate in France. Dr. Liautard sent his best wishes to all his friends in this country. Also mentioned how royally Dr. Evens, of Paris, entertained the party. Owing to war operations the Congress adjourned on the second day with every one anxious to return home.

Dr. Blair, who was also a delegate to the Congress, said that he could add but little to what Dr. Ackerman had said, and regretted that what promised to be a splendid Congress had been aborted by the beginning of the war.

The secretary then read a query asking for opinions as to what constitutes overloading of a team.

Dr. Rogers said that a rule obtained in Philadelphia that a team is not overloaded if they can pull the load under the whip.

On motion, seconded and carried, the privilege of the floor was extended to visitors and non-members.

Dr. Ackerman said that in relation to loading he recommended that the maximum load be four times the weight of the animal, exclusive of the vehicle.

The consensus of opinion seemed to be, however, that it is a hard matter to set any hard and fast rule regarding overloading, as it would be necessary to judge each case according to conditions governing the same.

In this opinion Dr. W. H. Kelly, of Albany, who was present, concurred.

Dr. Rogers said that it ought to be the duty of the veterinarian to instruct his clients regarding such matters, so as to obtain the greatest degree of efficiency.

A communication from the National Association Bureau of Animal Industry Employees, in which they asked this associa-

tion for support and co-operation in the passage of the Loebbeck-Lewis Bill, was read by the secretary.

On motion by Dr. Ackerman, seconded and carried, this bill was endorsed and the secretary instructed to write our State Senators asking them to support the same.

A unanimous vote of thanks was tendered Dr. Rogers for his valuable contribution to the program of the evening.

Dr. Maffitt Smith then reported for the prosecuting committee, stating that said committee had preferred charges against a member in writing to the secretary, which the secretary stated he had in regular form turned over to the Board of Censors for investigation.

Dr. Griessman then spoke of illegal practitioners testing horses for inter-state work.

Dr. Gill stated that in every case where a rumor of illegal testing came to his knowledge he endeavored to protect the interests of all concerned. Cited one case of this kind in which he secured an affidavit that the one so testing had performed the same in a legal manner. Also stated that he had personally interviewed several veterinarians and pointed out the error of their ways with good results.

Cited another case in which the veterinarian making the tests is said to be a non-registered man. Dr. Gill wrote, inviting him to produce proof of his registration, but up to the present time has had no answer.

Also said that it is his intention to have every horse in Greater New York tested, as well as any that may come in from other states.

Dr. T. E. Smith said that Dr. Gill had done a vast amount of work along this line during the past few months and deserved the help and support of all the profession.

Also advocated the education of the public as to having testing done, and stated that in his opinion glanders will be eradicated from the Middle Atlantic States in the course of three or four years.

At this point Dr. Smith told a story which served to break the monotony of the discussion and improve the spirits of all present.

Dr. Ackerman also spoke highly of the work being done by Dr. Gill, and said that he was heartily in accord with the effort made.

Dr. Ackerman moved that a committee be appointed to recommend a list of qualified veterinarians to the State Department of

Agriculture, whose tests should be recognized. Dr. M. Smith offered as an amendment that the Board of Censors act in this capacity.

Dr. Ackerman accepted the amendment and the motion as amended was unanimously carried.

Dr. Gill brought up the matter of Dr. Serling, and asked the association what, in their opinion, should be done in this case.

After some discussion, Dr. T. E. Smith moved that when any committee or member of this association produced proof that Dr. Serling, Sr., is making or has made illegal tests that said tests be not honored by the State Department of Agriculture—carried.

Dr. Ackerman stated that he had appeared before the Committee on Grades and Salaries of the Board of Estimate and Apportionment, and at that time they expressed a desire for the opinion of this association as to what should qualify a veterinarian as an applicant for a civil service position. Also requested that the secretary write Mr. Geo. L. Terrell, secretary of this committee asking if they still desired the opinion of this association.

Mr. Morse requested and was granted the privilege of the floor. He stated that Bowen had been before two Grand Juries, who had failed to indict him.

He suggested that a change of venue would surely result in an indictment.

He asked authority from this association to proceed with this case, but was informed that the prosecuting committee had full power to act.

After some further discussion, no further business appearing, the meeting adjourned.

R. S. MACKELLAR, Secretary.

NOVEMBER MEETING.

The regular monthly meeting of this association was called to order by President McKinney at 8.45 p. m.

The minutes of the October meeting were read and approved.

Dr. R. W. Ellis then gave a very interesting extemporaneous case-report of a dog—a Boston terrier puppy three or four months old which had passed no urine for 3 or 4 days. He attempted to pass catheter but was unsuccessful; then punctured the bladder, with no better results. Post-mortem examination revealed a clot of blood in the bladder enveloping a small cystolith.

Also exhibited bladder of a dog which had died a few hours after having been first seen, and on post mortem the bladder was found to be entirely filled with cystoliths. This was a very remarkable specimen.

The doctor then gave the history of the following case. A female collie three years old has had puppies twice—a year apart—the last time in August of this year. Was discharging pus, which was thought by the owner to be due to the fact of her having had puppies, but the history of passing blood in the urine caused the doctor to make a diagnosis of stone in the bladder, which was confirmed by rectal examination. Experience with the two previous cases prompted the suggestion of an operation.

After extra aseptic precautions and shaving of the abdomen, an incision was made on the median line in front of the pubic symphysis, just as for ovariotomy except that this incision was made nearer to the rim of the pelvis. Bladder was lifted and incised, which brought to light a stone weighing $2\frac{1}{2}$ drams (10 grammes), and measuring $1\frac{1}{8}$ by $1\frac{1}{2}$ inches. Dr. Ellis then exhibited the cystolith. The bladder was then stitched and the external wound closed. Subsequent treatment consisted in irrigating the bladder with chinosol solution—made an uneventful recovery.

This case report was discussed by Drs. Chase, Berns and Gannett, and a great amount of interest was shown by the members and visitors present.

Dr. J. A. McLaughlin then read a paper entitled, "The Organism, Its Division Into Two Separate Structures, Its Secondary Products."

In this paper the doctor again advanced his theory of nutrition and likened the body to a man made machine.

Dr. Kenny (M.D.), who was present, said that he did not agree with Dr. McLaughlin's statement that the animal body is purely mechanical, as each body is a living individual and each cell an entity in itself.

Dr. Kenny discussed this article at some length, and although he did not agree with Dr. McLaughlin's theories in many instances, he said that this subject was worthy of a great deal of study and consideration.

A unanimous vote of thanks was extended to Drs. Ellis, McLaughlin and Kenny for their valuable contributions to the program of the evening.

Dr. D. W. Cochran, Chairman of the Board of Censors, announced that the Censors would meet on Friday, November 13, 1914, in the College building, to consider charges pending against two members.

The Board of Censors also recommended that Dr. Julius Cavazzi, having been convicted of a felony, be expelled from this association.

This recommendation of the Censors, on motion, was unanimously adopted and Dr. Cavazzi declared expelled from membership.

Dr. Griessman moved that a communication be sent to the State Board of Veterinary Examiners, advising them of the action of this association regarding Dr. Cavazzi, and recommending that his license to practice be revoked, seconded and unanimously carried.

An appeal from the Massachusetts Veterinary Association for financial aid in erecting a monument in Washington, D. C., to the memory of Dr. D. E. Salmon, was read by the secretary.

Dr. Gill moved that a post card subscription be used for the purpose of gathering a fund for this worthy purpose, seconded and unanimously carried.

The resignation of Dr. D. J. Mangan, which had been laid on the table since November, 1913, was regretfully accepted.

Dr. Griessman announced the death of Mr. Arthur Rosenberg, counsel for the prosecuting committee of this association.

The secretary was instructed to write a letter of condolence to the family of Mr. Rosenberg.

Dr. Chase mentioned the prevalence of Foot and Mouth Disease and the possibility of its spreading. Suggested that some one familiar with this scourge prepare a paper to be read at the December meeting.

Dr. Gill suggested writing Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, requesting that he designate some member of his staff to present this subject at the next meeting of this association.

Dr. Berns made a motion covering this suggestion of Dr. Gill's, which was seconded and unanimously carried.

Dr. Henry L. Hirscher, whose application for membership was endorsed by a majority of the Board of Censors, was unanimously elected to membership by the secretary casting one ballot.

No further business appearing, meeting adjourned.

ROBT. S. MACKELLAR, Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of the M. V. M. A. was held in Lewiston at the DeWitt Hotel, October 14, 1914. The meeting called to order at 7.40 p. m. by the president, Dr. Jervis.

Roll call: Drs. C. L. Blakely, W. H. Corey, C. F. Davis, C. F. Dwinal, E. E. Gibbs, L. K. Green, G. R. Inglis, H. B. F. Jervis, A. Joly, W. H. Lynch, M. E. Maddocks, A. L. Murch, J. A. Ness, C. W. Purcell, W. H. Robinson, E. E. Russell, I. L. Salley, H. L. Stevens, C. W. Watson, G. F. Wescott and H. B. Wescott.

Minutes of the July meeting were read and accepted. Dr. Lynch asked that the minutes of the April meeting be read, which was done by the secretary. The executive committee reported favorably on the applications of Drs. P. R. Baird, of Waterville, and H. T. Paul, of Portsmouth, N. H., and they were successfully balloted upon and elected to membership. The applications of Drs. H. S. Irish, of Westbrook, and J. F. Moran, of Somersworth, N. H., were read and referred to the executive committee.

Dr. W. H. Robinson had the secretary read the resolutions drawn up by the special committee, endorsing the bill before congress in regard to the employees of the B. A. I.

RESOLUTION.

At the quarterly meeting of the Maine Veterinary Medical Association, held at Rockland, July 8, 1914; it was voted to endorse the Lobeck Bill H. R. 9292 and S. 5720.

Be it therefore resolved, That this association do all in its power to promote the passage of this bill in both branches of Congress. That a copy of these resolutions be sent the members of both houses on this committee, a copy be inserted in the records of our meeting and a copy sent to the AMERICAN VETERINARY REVIEW.

Be it further resolved, That the committee send a copy of these resolutions and a letter urging them to use their influence in the passing of this bill to the Representatives and Senators from our State of Maine.

W. H. ROBINSON,
A. JOLY,
W. L. WEST,
Committee.

Dr. Salley presented a resolution to be sent to the Governor-elect, Hon. Oakley C. Curtis, asking him to retain Dr. A. Joly in the office of Live Stock Sanitary Commissioner, which position he has held for the past two years.

RESOLUTION.

To His Excellency, the Governor-elect, OAKLEY C. CURTIS, Portland, Maine:

Whereas, Our Live Stock Sanitary Commissioner, Dr. A. Joly, has performed the duties of his office in a thoroughly scientific and business-like manner; the policy followed in carrying out the enforcement of our sanitary laws in relation with the prevention of contagious diseases among our domestic animals has been the most commendable for the live stock interests of the State of Maine; his administration has been the work of a sanitarian with perfect understanding of the different problems which confront the existing conditions in the State.

Resolved, That we, the members of the Maine Veterinary Medical Association, here assembled in Lewiston, October 14, 1914, at this quarterly meeting, regardless of party affiliations, respectfully request the Governor-elect, Hon. Oakley C. Curtis, to maintain in office our present Live Stock Sanitary Commissioner, Dr. A. Joly, whose services have been efficient and whose administration has been strictly non-partisan.

This resolution was seconded and carried. Dr. Joly thanked the members for this token of esteem.

Guests were: Drs. H. S. Irish, P. R. Baird and Mr. E. S. Cooper.

It was voted to have a box of cigars at each meeting. It was voted that the secretary ask the secretary of the Board of Examiners to furnish the secretary of the State Association with a list of all graduates as soon as they pass the board, so that he might get them to join the association. A legislative committee was voted to be chosen from the floor. The members nominated from the floor to serve on this committee were: Drs. Murch, Joly, Ness, Salley, Blakely and the president, Dr. Jervis. It was voted that this committee have the power to call on any member for assistance and that the association pay all expenses incurred in the legislative work.

Dr. G. R. Inglis, instead of presenting a paper, gave a very interesting account of the work they are doing in Auburn in cleaning up the milk supply. He described the conditions found

on the several farms that have been inspected so far in the campaign. Drs. Corey, Ness, Purcell also talked on this subject and tried to advance some scheme for the association to work on to promote the betterment of tieups and general milk production in regard to good, sanitary, wholesome milk, but after much thrashing of the different arguments it was decided to have every member do what little he can in his own way in this matter. Dr. W. H. Corey was excused from reading on account of ill health.

Dr. L. K. Green, inspector in charge of the Penley abbatoir at Auburn, read a very interesting paper on the *lymph glands of the bovines. Dr. Green laid great stress on the importance of the lymph glands, especially in regard to post-mortem work and on the killing beds. He kindly explained the duties of the veterinarians who work on the killing beds. A rising vote of thanks was extended Dr. Green for his very interesting paper.

Dr. Jervis appointed Drs. Baird, Irish and Corey as speakers for the January meeting. It was voted to hold the next meeting at Augusta. By a vote it was voted to suspend the by-laws and hold the meeting on the 4th Wednesday of January instead of the 2d, as is customry. It was voted to have a banquet and have the ladies as guests. A banquet committee consisting of Drs. Blakely, Maddocks and Joly was appointed by the president. Meeting adjourned at 9.50 p. m.

H. B. WESCOTT, Secretary.

MIDSUMMER MEETING OF THE MICHIGAN AND NORTHWESTERN OHIO STATE VETERINARY MEDICAL ASSOCIATIONS.

Meeting called to order by President A. McKercher at the Hotel Griswold, Detroit, Tuesday, July 7, 1914. A short address of welcome was delivered by Dr. G. W. Dunphy, who referred to the delightful weather and the pleasure of having so many of the ladies and members of the Northwestern Association present. Doctor Dunphy spoke of the very friendly spirit of co-operation existing between the two associations and the advantages gained by uniting in these semi-annual reunions, the exchanging of ideas, increasing enthusiasm, thus creating a de-

* Published in present issue, beginning on page 316.

sire for greater magnitude, the thoughts of which was a great pleasure, especially to the older members of the profession.

The president then called upon President Eldredge, who, in behalf of members of the Northwestern Ohio Association, thanked the Michigan association for the kind invitation to unite with them at this time, and looked forward to the time when the Ohio Association would be able to entertain them.

Dr. Theodore F. Krey then made the announcements for the afternoon and evening, and Dr. H. M. Gohn, Chairman of the Legislative Committee of the Michigan Association, announced a meeting of said committee immediately upon the arrival at Rochester, Wednesday morning. Meeting adjourned.

Tuesday, 1.30 p. m., the two associations, their wives and families, enjoyed a delightful trolley ride to Mt. Clemens as guests of the Detroit Creamery Company and Business Men's Association. The special cars being furnished by the Creamery Company. After a two hours' inspection of the stables and buildings at the Ingleside Farms the visitors were conducted through the famous Bath Houses and other places of interest at Mt. Clemens, returning to Detroit via Shore Line. At 8.30 the members and visitors gathered for the moonlight excursion on the steamer Columbia. The weather was ideal and the trip was a rare treat to many and enjoyed by all.

As early as eight a. m. four special cars were provided by the association, and the guests and members all enjoyed the trolley trip to Rochester, where they were royally entertained by Parke, Davis & Co. Immediately upon arrival at the Parkdale farm, the ladies were escorted through the several biological and other departments of interest to them, while the members witnessed the demonstration of the production of serum and anti-toxin, after which the convention assembled in a most beautiful grove, where they indulged in a genuine picnic luncheon. Dr. Krey then presented the ladies with a very neat and useful souvenir from the Parke-Davis Laboratory.

After luncheon, order was called and Dr. G. W. Dunphy announced the arrival of a ten pound boy at the home of Dr. and Mrs. W. H. Wilson. The doctor very ably responded with a speech.

Dr. W. H. Hoskins, being present, spoke in full of the army veterinary bill, urging the association to appeal to their respective senators, asking for a favorable action upon this bill.

A committee of three was appointed by the president to draft

a letter requesting the United States Senators to do all in their power to aid the passage of this bill.

Committee appointed: Drs. R. P. Lyman, G. W. Dunphy and Ward Giltner.

The following resolution was passed:

Whereas, The Parke-Davis Co., of Detroit, Michigan, has always shown a marked interest in the social as well as the scientific matters of the veterinary profession, and especially in the affairs of the Michigan Association and its associates and guests; therefore, be it

Resolved by the members of the Michigan and Northwestern Associations of Ohio, assembled here to-day, That a vote of thanks be extended to Parke, Davis & Co. for the very pleasant and generous entertainment afforded us on this occasion. A copy of these resolutions to be forwarded to the president of the company. Signed, B. C. Eldredge, President N. W. O. V. A.; A. McKercher, President M. S. V. M. A.

The entire afternoon was spent in an open-air clinic, while the ladies were given an automobile trip by the Business Men's Association of Rochester.

The operations included roarers, cryptorchids, ovariotomy--mare, thyroideectomy, tenotomy, castrations (standing), canine operations, firing (spavin), amputation of the penis and several other minor operations.

Operators: Drs. W. R. J. Fowler, J. H. Blattenburg, H. Fulstow, S. Brenton, J. P. Hutton, C. A. Waldron, G. W. Dunphy, R. H. Wilson and others.

W. AUSTIN EWALT, Secretary-Treasurer.

TENNESSEE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association was held at Nashville, November 10th and 11th, 1914. After the formal opening of the meeting by President McMahon, of Columbia, an invocation was delivered by the Rev. Dr. W. T. Haggard, of the Tulip Street Methodist Church. Mayor Howse then welcomed the members and visitors to the city of Nashville. The address of welcome was responded to by Dr. M. Jacob, of Knoxville. The president's address followed. The meeting was largely attended and some very important business transacted. The control of the present outbreak of foot and mouth disease

furnished material for serious discussion, in which State Veterinarian George R. White took a prominent part. Dr. J. B. Terrell, Dresden, who fell out of his hospital loft in the latter part of October, fracturing three ribs and otherwise injuring himself had the ambition, stimulated by his interest in the association, to attend the Nashville meeting, although still far from well. The election of officers resulted as follows: President, J. B. L. Terrell, Dresden; First Vice-President, P. J. Landes, Nashville; Second Vice-President, F. R. Youree, Lebanon; Secretary, J. H. McMahon, Columbia; Treasurer, G. P. Whittington, Morristown.

SECRETARY J. H. BURT, KANSAS VETERINARY ASSOCIATION, announces that the annual meeting of that association will be held at Topeka, January 5th and 6th, 1915, and that the programme promises to be good, and a successful meeting is assured.

A CALL FROM PROFESSOR KAUPP.—We had the pleasure of a call from Prof. B. F. Kaupp on November 20, on his way up to New England, before taking up his duties as pathologist at the A. and M. College, Raleigh, N. C. Dr. Kaupp came up to Washington, D. C., from Spartanburg, S. C., thence to Rutgers College, New Brunswick, N. J., and then to New York. From New York he goes to Vermont before returning to the South.

EIGHTEENTH ANNUAL MEETING UNITED STATES LIVE STOCK SANITARY ASSOCIATION POSTPONED.—Chicago, November 13, 1914: Many Federal and State Officials are engaged in controlling foot-and-mouth epidemic, consequently your executive has agreed it is best to hold our meeting later than dates originally announced. Notice of new dates will be given as far in advance as possible. S. H. Ward, president; John J. Ferguson, secretary-treasurer.

VETERINARIAN PRESENTS GOVERNOR.—There recently floated into the REVIEW office a post card bearing a picture of Governor Luther E. Hall, of Louisiana, addressing a group of people from an automobile at the opening of the Baton Rouge Live Stock and Agricultural Fair. Seated in the auto we recognize our good friend, Dalrymple, who had just finished an introductory address and presented the Governor. The veterinary profession is always taken care of where Dr. Dalrymple is.

NEWS AND ITEMS.

BULLETIN, UNITED STATES LIVE STOCK SANITARY ASSOCIATION—FOOT AND MOUTH DISEASE—A SUMMARY OF THE SITUATION AS REPORTED TO THIS OFFICE NOVEMBER 12, 1914, BY OFFICIALS OF THE FOLLOWING STATES:

Illinois, Indiana, Kentucky, Michigan, Missouri, North Dakota, Rhode Island, Tennessee, Iowa, Massachusetts, Minnesota, Nebraska, Pennsylvania, South Dakota, Texas, Kansas, Mississippi, New Jersey, Wisconsin.

The following night letter telegrams were received in response to our wire to the official in charge in nineteen States:

“Please wire night letter to-night summarizing epidemic situation your State.” JOHN J. FERGUSON, Secretary.

ILLINOIS.

November 12, 1914.

All infected herds and all exposed cattle have been quarantined and situation well in hand. All shipments within State will be made in accordance with Regulation 6, which provides for the movement of cattle, sheep and hogs under affidavit by the owner to the effect that the animals are not affected with, or have not been exposed to, the contagion of foot-and-mouth disease. All shipments to public stock yards must be made in clean and disinfected cars for immediate slaughter.

O. E. DYSON, State Veterinarian.

INDIANA.

November 11, 1914.

In eleven counties positive cases, five others report suspicious diagnosis not confirmed. Original counties believed to be clean and two others also. Canvass by State men shows no new centers to-day, several shipments to re-examine.

A. F. NELSON, State Veterinarian.

IOWA.

November 11, 1914.

Outbreak well in hand. Positive diagnosis two herds Iowa County, one herd Jones County, one herd Howard County, held

for examination. Final diagnosis in Clinton County to-morrow. All direct and secondary exposures held in quarantine, also railroad yards, all stock cars held for cleaning and disinfection. Quarantine on disease promises very rigid. Believe Iowa will escape with only few centers infection.

J. I. GIBSON, State Veterinarian.

KANSAS.

November 11, 1914.

Careful inquiry over State for past forty-eight hours finds no indication of foot-and-mouth disease. State clear of said disease up to five p. m. to-day.

TAYLOR RIDDLE, Live Stock Sanitary Commissioner.

KENTUCKY.

November 11, 1914.

Dr. Graham out of city, State quarantined. 18 cattle slaughtered at Sheperdsville, Bullit County, to-day other reports of suspicion, but unofficial.

R. L. PONTIUS.

MASSACHUSETTS.

November 11, 1914.

Fourteen herds, including about 200 cattle and 300 swine in twelve towns in widely separated sections of State. New cases reported daily. State under strict quarantine. Interstate movement regulated by strictest State-wide quarantine covering all live stock. Slaughter to begin at once. All public markets closed.

FRED F. WALKER, Commissioner.

MICHIGAN.

November 11, 1914.

The epidemic of foot-and-mouth disease is fairly well in hand. We expect to have it wiped out this week. Inspectors not finding any new cases yesterday or to-day. No infection of native herds from feeders shipped in, but many cars of feeders are found diseased. Situation looking brighter.

GEO. W. DUNPHY, State Veterinarian.

MINNESOTA.

November 11, 1914.

Three cars exposed cattle unloaded transfer shipped west on reaching Glendive found diseased. Fed at Mandan and Glen-

dive. All yards quarantined. Ten shipments settlers stock exposed at transfer. These quarantined. No developments yet. Transportation companies disinfecting all cars. Situation so far favorable.

S. H. WARD, State Veterinarian.

MISSISSIPPI.

November 11, 1914.

We investigated report of outbreak foot-and-mouth disease at Como, Miss., and found no evidence of the disease being there. This was confirmed by Federal inspectors. Do not believe the disease exists in this State. Precautions are taken.

E. M. RANCK, State Veterinarian.

MISSOURI.

November 11, 1914.

Have found no foot-and-mouth disease in Missouri. We are reinspecting about one hundred fifty recent shipments of cattle into this State and are prepared to promptly control any outbreak that may be found. Are carefully guarding against all possible sources of infection.

D. F. LUCKEY, State Veterinarian.

NEBRASKA.

November 11, 1914.

Foot-and-mouth disease has not reached us at present time. Dourine exists in central part of the State. Five counties have been placed in quarantine; Cherry, Thomas, Blaine, Hooper, Grant; have quarantined all shipments of hogs, cattle and sheep since October 1st into Nebraska from Chicago Stock Yards.

L. C. KIGIN, Deputy State Veterinarian.

NEW JERSEY.

November 11, 1914.

Twenty-five cases of foot-and-mouth disease have been discovered in one herd in Hudson Co., N. J., animals are being slaughtered and premises thoroughly disinfected. History of cases show that they came from Stock Yards in New York City. All animals shipped from these yards to New Jersey since October 1st are being examined in Hudson County. All cattle are being inspected by veterinarians. State quarantine has been issued on all cattle shipped into New Jersey since October 1st. State

officials are co-operating with Federal authorities in effort to discover any cases in State and to limit spread of the disease.

JACOB C. PRICE, Secretary.

NORTH DAKOTA.

November 11, 1914.

No disease known to exist in this State. Shipment infected cattle fed here enroute Montana Stock Yards, immediately quarantined, being cleaned and disinfected.

W. F. CREWE.

PENNSYLVANIA.

November 11, 1914.

In addition to Pittsburg, Lancaster and West Philadelphia Stock Yards have one hundred premises affected to date. Many suspicious cases reported which are being investigated. Entire State quarantined yesterday. Have mailed copy of order. Destruction of animals and disinfecting of premises under way. Conditions more serious than nineteen eight outbreak.

C. J. MARSHALL.

RHODE ISLAND.

November 11, 1914.

At present about two hundred and ninety-two cattle and seventy hogs quarantined in Rhode Island, all foot-and-mouth disease. One hundred and twelve of above cattle diseased. Sixteen points of infection in six towns and one city which are in two counties, all traced to Brighton market, Brighton, Mass.

JOHN S. POLLARD, State Veterinarian.

SOUTH DAKOTA.

November 11, 1914.

No known infection of foot-and-mouth disease in South Dakota. About twenty importations which may be exposed held under quarantine at present.

O. C. SELBY, State Veterinarian.

TENNESSEE.

November 11, 1914.

We have not found a single case of European foot-and-mouth disease in Tennessee. Have already traced and examined several shipments and found them all free from disease. Have five more shipments from the State of Illinois to trace and examine. This will be done Thursday and Friday. If we find no disease in these,

we will feel fairly well satisfied that Tennessee has escaped the outbreak unless it be introduced later by infected live stock cars. All public stock yards in the State have been ordered cleaned and disinfected under official supervision within five days.

C. R. WHITE, State Veterinarian.

TEXAS.

November 11, 1914.

We have no epidemic in this State.

E. R. FORBES.

WISCONSIN.

November 11, 1914.

Seven herds known to be infected. Three other herds contain suspected cases. Almost all shipments have been given preliminary examinations. First two herds have been destroyed to date. Work progressing rapidly. Expect to have all infected herds disposed of this week. Only one herd separate from these found affected. No stock except horses will be moved in Wisconsin except on veterinarian's certificate and in disinfected cars. All suspected herds quarantined.

O. H. ELIASON.

NEW JERSEY LEGISLATURE HAS VETERINARY REPRESENTATIVE.—Dr. E. L. Loblein, of the State Legislature of New Jersey, has the distinction of being its youngest member; and we predict, one of its most active members. Dr. Loblein's father, who was among the leading veterinarians of New Jersey, was our valued friend for many years; while our acquaintance with the present Dr. Loblein (who has been secretary of the Veterinary Medical Association of New Jersey for several years, enjoys a splendid practice in New Brunswick, that state, and has recently reached the distinguished and dignified position of Member of the State Legislature) dates back to his days of short pants; so we feel that we know him pretty well. And because of that knowledge, we congratulate the members of the veterinary profession in New Jersey, in having a man of Dr. Loblein's type represent them at the State Capital.

DR. McWHINNEY DEAD.—Dr. Henry McWhinney, city veterinarian, of Troy, N. Y., died the last of November. Dr. McWhinney, who was 49 years old, was a well-known veterinarian. He was a graduate of McGill University, and member of the New York State Veterinary Medical Society and American Veterinary Medical Association. The doctor was a thirty-two degree Mason.

UNITED STATES CIVIL-SERVICE EXAMINATION—VETERINARIAN (MALE)—JANUARY 6, 1915.—The United States Civil Service Commission announces an open competitive examination for veterinarian, for men only, on January 6, 1915. From the register of eligibles resulting from this examination certification will be made to fill vacancies in the position of veterinary inspector in the Bureau of Animal Industry, Department of Agriculture, and in the position of veterinarian in the Quartermaster Corps, U. S. Army, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Preliminary Requirements, Entrance Salaries, Etc.—Bureau of Animal Industry—Graduation from an accredited veterinary college or the fact that the applicant is a senior student in such an institution, is a prerequisite. Such senior students will not be certified for appointment until after they have furnished proof of actual graduation. Entrance salary, \$1,400 per annum. It is probable that a large number of appointments will be made in the near future.

Quartermaster Corps—Graduation from a veterinary college and one year's actual practice as veterinarian on horses are prerequisites. Entrance salary, \$1,200 per annum. There are now several vacancies at Texas City and Galveston, Tex., and additional vacancies will depend upon the activity of the Army on the Mexican border. In certification of eligibles preference will be given to those examined in the vicinity of the place where the vacancy exists.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

| Subjects. | Weights. |
|--|----------|
| 1. Letter writing | 10 |
| 2. Veterinary anatomy and physiology..... | 20 |
| 3. Veterinary pathology and meat inspection..... | 30 |
| 4. Theory and practice of veterinary medicine..... | 30 |
| 5. Education, training, and experience..... | 10 |
| Total..... | 100 |

Each applicant will be required to submit to the examiner on the day of the examination an unmounted photograph of himself taken within two years. An applicant who fails to present such photograph will not be admitted to the examination. Timed types will not be accepted.

This examination is open to all men who are citizens of the United States and who meet the requirements.

Persons who meet the requirements and desire this examination should at once apply for Form 1312, stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C.

THE PLACE FOR A VETERINARIAN.—It has always seemed strange that a trained man, a veterinary surgeon, was not at the head of the Massachusetts Cattle Commission. And it seems doubly strange now with the dreaded hoof-and-mouth disease affecting herds in many portions of the state.

This disease might easily have been kept out of Massachusetts if proper precautions were taken when it was known that it had broken out in the stock yards of Chicago and in the cattle pens of Buffalo. But with an untrained officer at the head of our state cattle commission it is not to be wondered at that proper precautions were not taken until too late.

As the *Boston Herald* says on this matter: "The present epidemic of foot-and-mouth disease which attacks all animals with hoofs and many without serves to make very evident that only through skilled protection of our live-stock can our people be protected, both in their health and in their pocket-books. The Massachusetts commissioner of animal industry acknowledges that the whole present epidemic in Massachusetts, with its great loss to the state, might have been prevented. He states that on October 21 he was notified that this epidemic had traveled as far east as the stockyards at Buffalo. In spite of this warning cattle were allowed to come into Massachusetts and were not quarantined when they reached here, Mr. Walker trusting to an inspection of cattle as they entered the state.

"As the disease takes some days to develop and the germ is as yet unknown, no inspection could possibly discover the disease in the cows before it had made its appearance, so that inspection was worthless, as the result has proved. The cattle from the west went to a dealer in Amherst, who sells his cows at Brighton. An infected animal carried there the disease from Amherst, and from Brighton other cattle infected by this one, have gone all over Massachusetts and evidently to other parts of New England.

"The cattle commissioner of Massachusetts should be a thoroughly trained veterinarian—Mr. Walker is not a veterinarian. It was only a question of time before something of this sort must happen, costing the state hundreds of thousands of dollars. The farming industry of Massachusetts is not to be made dependent on anything but the best of available talent."—(*Lawrence Telegram.*)

THE NEW ORLEANS MEETING.

(Continued from Page 256.)

VOTE OF MEMBERSHIP RECEIVED TO DECEMBER 9.

Having been the official organ of the national association from the time of its birth, and always having kept the members posted on all the details pertaining to the same, the REVIEW felt it to be its duty on this occasion, to delay the December issue with the hope that in the addition of this page, it would be enabled to bring to the A. V. M. A. members, and to *all* its readers, definite knowledge of the result of the poll of the members, as to their wishes in the matter of postponement of the meeting at New Orleans, from the original dates set, to a time when (the fight against foot-and-mouth disease having been won) a large and successful meeting will be possible. We fear, however, that it will not be possible for us to wait for the full returns, without having the number reach our readers altogether too late; but are in a position to say now, that out of 747 votes returned 651 have been for postponement; so that it is safe to say the meeting will be postponed. Of course an official announcement of the final result will be sent each member from the secretary's office. We regret exceedingly, as no doubt everyone does, that a postponement was necessary, as our editorial shows that we were all prepared to go; but under the circumstances we feel that everyone should accept it gracefully. By this step the members will at least be spared the time and expense of travel, that was not possible to save those who went to London for the international congress, only to find that country engaged in war, and the meeting therefore impossible. Besides, there is no reason why a successful meeting cannot be held in April; possibly during Easter week, when college men will again have a few days' vacation. The local committee of arrangements have worked hard in preparation for this meeting, and want a full attendance; and, realizing that a full attendance cannot be had at the original dates fixed, are strongly in favor of postponement. Consideration for those gentlemen should help us to content ourselves with the change. We should be more than contented not to have another London experience, and as soon as it is possible to fix the new dates, hustle to make the deferred meeting all that our friends in the Southland would have it—the biggest, most impressive and best that has yet been held.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list:

| Name of Organization. | Date of Next Meeting. | Place of Meeting. | Name and Address Secretary. |
|---|---|--|---|
| Alabama Veterinary Med. Ass'n. | Mar. 5-6, 1914 | Auburn..... | C. A. Cary, Auburn. |
| Alumni Ass'n, N. Y.-A. V. C. | June 10, 1915..... | 141 W. 54th St..... | P. K. Nichols, Port Richmond, N. Y. |
| American V. M. Ass'n..... | Dec. 28-31, 1914..... | New Orleans, La..... | Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill. |
| Arkansas Veterinary Ass'n..... | January 5-6, 1915..... | Little Rock..... | R. M. Gow, Fayetteville. |
| Ass'n Médécale Veterinare Française "Laval" | 1st and 3d Thur. of each month..... | Lec. Room, La- val Un'y, Mon- treal..... | J. P. A. Houde, Montreal. |
| B. A. I. Vet. In. A., Chicago | 2d Fri. each month..... | Chicago..... | H. A. Smith, Chicago, Ill. |
| B. A. I. Vet. In. A., So. Omaha | 3d Mon. each month..... | S. Omaha, Neb..... | E. J. Jackson, So. Omaha. |
| Buchanan Co. Vet. Ass'n..... | Monthly..... | St. Joseph..... | F. W. Caldwell, St. Joseph, Mo. |
| California State V. M. Ass'n..... | December 10, 1913..... | San Francisco..... | John F. McKenna, Fresno. |
| Central Canada V. Ass'n..... | Feb. and July..... | Ottawa..... | A. E. James, Ottawa. |
| Central N. Y. Vet. Med. Ass'n..... | June and Nov..... | Syracuse..... | W. B. Switzer, Oswego. |
| Chicago Veterinary Society..... | 2d Tues. each month..... | Chicago..... | D. M. Campbell, Chicago. |
| Colorado State V. M. Ass'n..... | January, 1914..... | Denver..... | I. E. Newsom, Ft. Collins. |
| Connecticut V. M. Ass'n..... | 1st Tues., Feb., 1915..... | Hartford..... | B. K. Dow, Willimantic. |
| Delaware State Vet. Society..... | Jan., Apl., July, Oct. | Wilmington..... | A. S. Houchin, Newark, Del. |
| Essex Co. (N. J.) V. M. A. | 3d Mon. each month..... | Newark, N. J..... | J. F. Carey, East Orange, N. J. |
| Genesee Valley V. M. Ass'n..... | 2d week, July, 1913..... | Rochester..... | J. H. Taylor, Henrietta. |
| Georgia State V. M. A. | Dec. 22-23, 1913..... | Atlanta..... | P. F. Bahnsen, Americus. |
| Hamilton Co. (Ohio) V. A. | Nov. 20, 1914..... | E. St. Louis..... | Louis P. Cook, Cincinnati. |
| Illino Vet. Med. Ass'n..... | Dec. 3-4-5, 1914..... | Chicago..... | L. B. Michael, Collinsville, Ill. |
| Illinois State V. M. Ass'n..... | Jan. 14, 1914..... | Indianapolis..... | L. A. Merillat, Chicago. |
| Indiana Veterinary Association..... | Dec. 9-10-11, 1914..... | Cedar Rapids..... | A. F. Nelson, Indianapolis. |
| Iowa Veterinary Ass'n..... | Jan. 5-6, 1915..... | Topeka..... | C. H. Stange, Ames. |
| Kansas State V. M. Ass'n..... | Oct. & Feb. each year..... | Lexington..... | J. H. Burt, Manhattan. |
| Kentucky V. M. Ass'n..... | 2d Tues. each month..... | Philadelphia..... | Robert Graham, Lexington. |
| Keystone V. M. Ass'n..... | Pending..... | Pending..... | Cheston M. Hoskins. |
| Lake Erie V. M. Association..... | Sent., 1914..... | Lake Charles..... | Phil. H. Fulstow, Norwalk, Ohio. |
| Louisiana State V. M. Ass'n..... | Jan. 27, 1915..... | Augusta..... | Hamlet Moore, New Orleans, La. |
| Maine Vet. Med. Ass'n..... | 4th Wed. each month..... | Baltimore..... | H. B. Wescott, Portland. |
| Maryland State Vet. Society..... | Feb. 3, 4, 1914..... | Young's, Boston..... | H. H. Counselman, Sec'y. |
| Massachusetts Vet. Ass'n..... | Jan. 13-14, 1915..... | Lansing..... | W. T. Pugh, Southbridge. |
| Michigan State V. M. Ass'n..... | 1914..... | Northfield..... | W. A. Ewalt, Mt. Clemens. |
| Minnesota State V. M. Ass'n..... | Jan. 27, 28, 29, 1914..... | Vicksburg..... | G. Ed. Leech, Winona. |
| Mississippi State V. M. Ass'n..... | Semi-Annually..... | Kansas City, Mo..... | J. D. Townsend, Louisville. |
| Missouri Valley V. Ass'n..... | July, 1915..... | Galesburg, Ill..... | Hal. C. Simpson, Denison, Ia. |
| Missouri Vet. Med. Ass'n..... | Sept. 24, 25, 1913..... | St. Louis..... | G. E. McIntyre, Alexis, Ill. |
| Montana State V. M. A. | 2d Mon., Aug., 1915..... | Helena..... | Chas. D. Tolse, Kansas City. |
| Nat'l Ass'n B. A. I. Employees..... | 1st Mo. & Tu., Dec. '13 | New York, N. Y..... | A. D. Knowles, Livingston. |
| Nebraska V. M. Ass'n..... | 1915..... | Lincoln, Neb..... | S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis. |
| New York S. V. M. Soc'y. | June 23, 1914..... | Ithaca..... | Carl J. Norden, Nebraska City. |
| North Carolina V. M. Ass'n..... | Week of July 20, 1914..... | Wilson..... | H. J. Milks, Ithaca, N. Y. |
| North Dakota V. M. Ass'n..... | Nov. 1913..... | Fargo..... | J. P. Spoon, Burlington. |
| North-Western Ohio V. M. A. | Jan. 6-7, 1915..... | Delphos..... | A. F. Schalk, Agricultural College. |
| Ohio Soc. of Comparative Med. | Annually..... | Columbus..... | E. V. Hover, Delphos. |
| Ohio Valley Vet. Med. Ass'n..... | Fall, 1913..... | Upper Sandusky..... | Reuben Hiltz, Toledo. |
| Oklahoma V. M. Ass'n..... | 1st Week in Feb., 1914..... | Oklahoma City..... | F. F. Sheets, Van Wert, Ohio. |
| Ontario Vet. Ass'n..... | March, 1915..... | Toronto..... | J. C. Howard, Sullivan. |
| Pennsylvania State V. M. A. | Call of President..... | Harrisburg..... | C. E. Steel, Oklahoma City. |
| Philippine V. M. A. | 4th Tues. each month..... | Manila..... | L. A. Willson, Toronto. |
| Portland Vet. Med. Ass'n..... | Jan. and June..... | Portland, Ore..... | John Reichel, Glenolden. |
| Province of Quebec V. M. A. | Pending..... | Mon. and Que..... | David C. Kretzer, Manila. |
| Rhode Island V. M. Ass'n..... | Aug. 4-5-6, 1914..... | Providence..... | Sam. B. Foster, Portland, Ore. |
| South Carolina Ass'n of Veter. ns. | 1st Wed. fol. the 2d Sun. each month..... | Pending..... | Gustave Boyer, Rigaud, P. Q. |
| South Illinois V. M. and Surg. Ass'n..... | Dec. 16, 1914..... | Salem..... | J. S. Pollard, Providence. |
| St. Louis Soc. of Vet. Inspectors..... | Pending..... | St. Louis..... | B. K. McInee, Charleston. |
| Schuylkill Valley V. M. A. | Jan. Apl., July, Oct. | Reading..... | F. Hockman, Iola. |
| Soc. Vet. Alumni Univ. Penn. | 4th Tues. each month..... | Philadelphia..... | Wm. T. Conway, St. Louis, Mo. |
| South Dakota V. M. A. | November, 1914..... | Madison..... | W. G. Huyett, Wernersville. |
| Southern Ass'n of Cal. S. V. M. Ass'n..... | 2d Thu. each month..... | Los Angeles..... | B. T. Woodward, Wash'n, D. C. |
| South St. Joseph Ass'n of Vet. Insp. | Spring of 1914..... | 407 Illinois Ave..... | S. W. Allen, Watertown. |
| Tennessee Vet. Med. Ass'n..... | 2d Thu. each month..... | Nashville..... | J. A. Dell, Los Angeles. |
| Texas V. M. Ass'n..... | Nov., 1913..... | College Station..... | H. R. Collins, South St. Joseph. |
| Twin City V. M. Ass'n..... | 2d Thu. each month..... | St. P. Minneap..... | O. L. McMahon, Columbia. |
| Utah Vet. Med. Ass'n..... | Spring of 1914..... | Salt Lake City..... | Allen J. Foster, Marshall. |
| Vermont Vet. Med. Ass'n..... | 3d Wed. each month..... | 514 9th St., N.W. | M. H. Reynolds, St. Paul, Minn. |
| Veterinary Ass'n of Alberta..... | 1st Sat. each month..... | Wash'ton, D. C..... | E. J. Coburn, Brigham City. |
| Vet. Ass'n Dist. of Columbia..... | Feb. & July each yr. | Winnipeg..... | G. T. Stevenson, Burlington. |
| Vet. Med. Ass'n of Geo. Wash. Univ. | Jan. 14, 1915..... | 141 W. 54th St..... | C. H. H. Sweetapple, For. Saskatchewan, Alta., Can. |
| Vet. Ass'n of Manitoba..... | 1st Wed. each month..... | Jersey City..... | M. Page Smith, Washington, D. C. |
| Vet. Med. Ass'n of N. J. | Monthly..... | Staunton..... | J. M. Cashell, 2115 14th Street. |
| V. M. Ass'n, New York City..... | July 9-10, 1914..... | Pullman..... | Wm. Hilton, Winnipeg. |
| Veterinary Practitioners' Club..... | 1st & 3d Fri. Eve..... | Yakima..... | E. L. Loblein, New Brunswick. |
| Virginia State V. M. Ass'n..... | June, 1915..... | Buffalo..... | R. S. MacKellar, N. Y. City. |
| Washington State Col. V. M. A. | June 24, 1914..... | Pittsburgh..... | T. F. O'Dea, Union Hill, N. J. |
| Washington State V. M. A. | 3d Thu. each month..... | Milwaukee..... | Geo. C. Faville, North Emporia. |
| Western N. Y. V. M. A. | Feb. 10, 11, 1914..... | York..... | R. J. Donohue, Pullman. |
| Western Penn. V. M. Ass'n..... | June, Sept., Dec., Mar. | | Carl Cosier, Bellingham. |
| Wisconsin Soc. Vet. Grad..... | | | W. E. Frits, 358 Jefferson St., Buffalo |
| York Co. (Pa.) V. M. A. | | | Benjamin Gunner, Sewickley. |
| | | | W. W. Arzberger, Watertown. |
| | | | E. S. Bausticker, York, Pa. |

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